

# **National Grid SA-COA** **PRODUCTION FILE**

**Contractor : ABB Contracting Co.**

**Project : SS 8709- 132/13.8kV in Alkharj City**

**Contract No : 11131113/00**

**Substation : 8709**

**Subject : 132Kv Busbar Protection Set-1 (+BBP1-4)  
Relay Panel-4**





POWER SYSTEMS NETWORK MANAGEMENT  
PROTECTION AND SUBSTATION AUTOMATION SYSTEMS  
WBS NO: S-13656

ABB AUTOMATION COMPANY LTD.  
414, AL-KHARJ ROAD  
SECOND INDUSTRIAL CITY  
RIYADH-11383 K.S.A

CONTRACTOR : ABB Contracting Company  
CLIENT : National GridSA  
PROJECT : CONSTRUCTION OF NEW 132/13.8kV SS 8709 IN AL-KHARJ CITY  
SUBSTATION : S/S 8709  
CONTRACT NO. : 11131113/00  
TITLE : Assembly Drawing – +BBP1-4  
[132KV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL]

AS-BUILT BY \_\_\_\_\_ DATE \_\_\_\_\_ CONTRACT NO. **11131113/00** JOB ORDER NO. **S-13656**

01	13 49	FACTORY ASBUILT	DRAWN BY <b>RIZ</b> CHECKED BY <b>KVR</b>
00	13 05	FOR APPROVAL	DATE STARTED <b>28.01.2013</b> DATE COMPLETED _____
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. <b>CTPD</b> ENG. DEPT. <b>AUT-PSAC</b>

### COVER SHEET

**132KV BUSBAR PROT.N.MAIN-1 BU PANEL +BBP1-4**  
**S/S 8709 - 132/13.8KV IN AL-KHARJ CITY**  
**RIYADH SAUDI ARABIA**

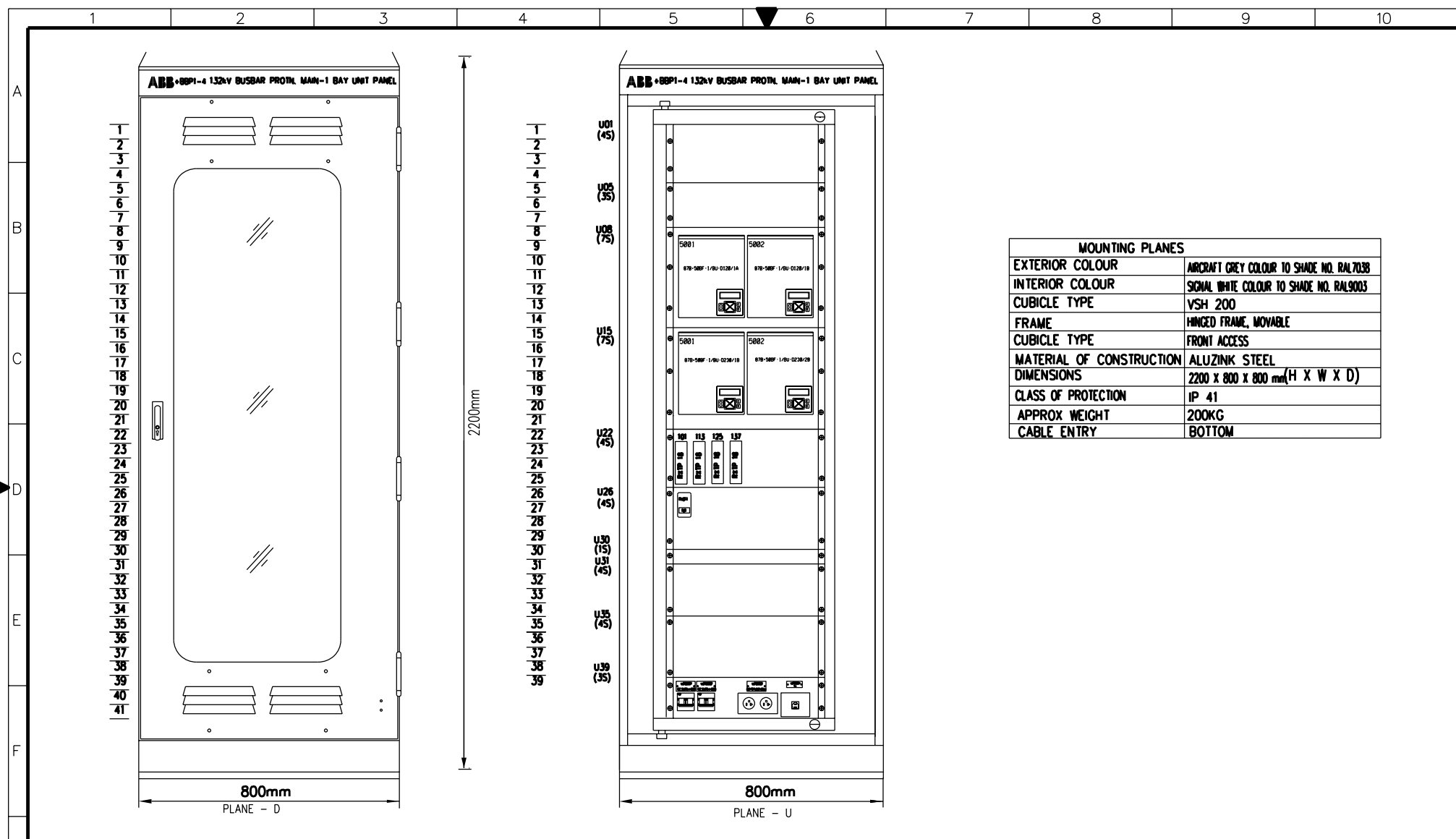
الشركة الوطنية لنقل الكهرباء



INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322996	SHT CONT.	01
			G00 G01	

NG/D2-D (2012/01)

DMS VECTOR NGD200



MOUNTING PLANES	
EXTERIOR COLOUR	AIRCRAFT GREY COLOUR TO SHADE NO. RAL7038
INTERIOR COLOUR	SIGNAL WHITE COLOUR TO SHADE NO. RAL9003
CUBICLE TYPE	VSH 200
FRAME	HINGED FRAME, MOVABLE
CUBICLE TYPE	FRONT ACCESS
MATERIAL OF CONSTRUCTION	ALUZINK STEEL
DIMENSIONS	2200 x 800 x 800 mm (H X W X D)
CLASS OF PROTECTION	IP 41
APPROX. WEIGHT	200KG
CABLE ENTRY	BOTTOM

AS-BUILT BY

DATE

CONTRACT NO.

11131113/00

JOB ORDER NO.

S-13656

01

13 49

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00

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REV. NO.

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DESCRIPTION

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RIZ

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KVR

DATE STARTED

28.01.2013

DATE COMPLETED

OPRG. DEPT.

CTPD

ENG. DEPT.

AUT-PSAC

ASSEMBLY DRAWING


132KV BUSBAR PROTN.MAIN-1 BU PANEL +BBPI-4

S/S 8709 - 132/13.8KV IN AL-KHARJ CITY

RIYADH SAUDI ARABIA

نقل الكهرباء

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National Grid sa

INDEX

PLANT NO.

DRAWING NUMBER

SHEET NO.

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C421

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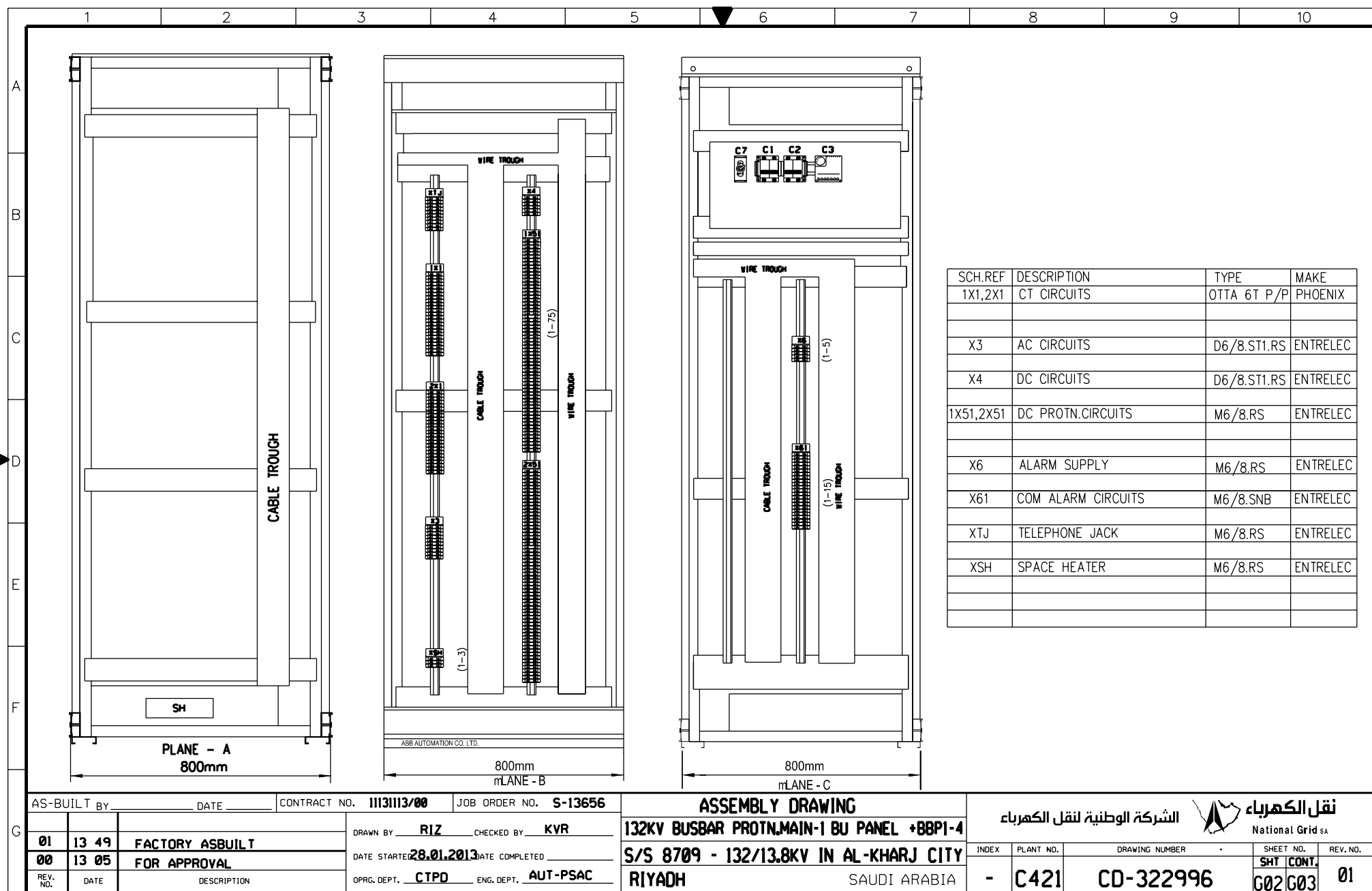
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CONT.

G01

G02

01



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TOP VIEW FOR EARTHING BAR

U PLANE TOP LABEL

+BBP1-4 132kV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL

800

28

U PLANE BOTTOM LABEL

ABB AUTOMATION CO. LTD

800

28

MANUFACTURING LABEL

**ABB** ABB Automation Co.Ltd.

PROJECT : National Grid SA S/S 8709

ORDER REFERENCE : 2875 RF S13656

YEAR OF MANUFACTURE: 2013

PANEL NO. : +BBP1-4

DRAWING NO. : S13656-CD-322997

MADE IN THE KINGDOM OF SAUDI ARABIA

AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00	JOB ORDER NO. S-13656	ASSEMBLY DRAWING		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء	
01	13 49	FACTORY ASBUILT	DRAWN BY RIZ CHECKED BY KVR	132KV BUSBAR PROTN.MAIN-1 BU PANEL +BBP1-4		National Grid sa			
00	13 05	FOR APPROVAL	DATE STARTED 28.01.2013 DATE COMPLETED	S/S 8709 - 132/13.8KV IN AL-KHARJ CITY		INDEX PLANT NO. DRAWING NUMBER		SHEET NO. REV. NO.	
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC	RIYADH SAUDI ARABIA		- C421 CD-322996		G04 L00 01	



POWER SYSTEMS NETWORK MANAGEMENT  
PROTECTION AND SUBSTATION AUTOMATION SYSTEMS  
WBS NO: S-13656

ABB AUTOMATION COMPANY LTD  
414, AL-KHARJ ROAD  
SECOND INDUSTRIAL CITY  
RIYADH-11383 K.S.A

CONTRACTOR : ABB Contracting Company  
CLIENT : National Gridsa  
PROJECT : CONSTRUCTION OF NEW 132/13.8kV SS 8709 IN AL-KHARJ CITY  
SUBSTATION : S/S 8709  
CONTRACT NO. : 11131113/00  
TITLE : LIST OF APPARATUS - +BBP1-4  
[132KV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL]

AS-BUILT BY \_\_\_\_\_ DATE \_\_\_\_\_ CONTRACT NO. **11131113/00** JOB ORDER NO. **S-13656**

01	13 49	FACTORY ASBUILT	DRAWN BY <b>RIZ</b> CHECKED BY <b>KVR</b>
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REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. <b>CTPD</b> ENG. DEPT. <b>AUT-PSAC</b>

### COVER SHEET

**132KV BUSBAR PROT.N.MAIN-1 BU PANEL +BBP1-4**  
**S/S 8709 - 132/13.8KV IN AL-KHARJ CITY**  
**RIYADH SAUDI ARABIA**


الشركة الوطنية لنقل الكهرباء



INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
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S.R. NO.	GA REF.	SCH. REF.	D E S C R I P T I O N	SHT.	QTY.	T Y P E	M A K E	O R D E R I N F O R M A T I O N
1 2	U08.5001 U08.5002	87B-50BF-1/BU-D120/1A 87B-50BF-1/BU-D120/1B	RELAY CUBICLE-- +BBP1-4 ACCOMODATING THE FOLLOWING BAY UNIT FOR NUMERICAL BUSBAR PROTECTION WITH FOLLOWING HIGH TROUGH-FAULT STABILITY EVEN IN CASE OF CT SATURATION. NEUTRAL CURRENT CRITERION INSTANTANEOUS VALUES FOR FAULT RECORDING. DISTURBANCE FREE AND FAST DATA TRANSFER TO & FROM CENTRAL UNIT PHASE SEGREGATED MEASUREMENT REDUCE CT PERFORMANCE REQUIREMENTS BUILT IN HUMAN MACHINE INTERFACE BUILT IN BREAKER FAILURE FUNCTION. END FAULT PROTECTION FUNCTION REDUNT POWER SUPPLY DISTURBANCE RECORDER (1.5SCE @ 2.4KHZ) PER BAY UNIT BINARY INPUT : 20 BINARY OUTPUT : 16 FULLY NUMERICAL SIGNAL PROCESSING RATED CURRENT : 1/5A AUX. VOLTAGE : 48-250V DC RATED FREQUENCY : 60HZ	293 295	2	REB 500	ABB	REB500-BU03-V7-C1-A45-P1-F1-BB1-I00-R0-OC1-BFP1-EFPI-PD0-DR0-L0-T0
3 4	U15.5001 U15.5002	87B-50BF-1/BU-D230/1B 87B-50BF-1/BU-D230/2B	BAY UNIT FOR NUMERICAL BUSBAR PROTECTION WITH FOLLOWING HIGH TROUGH-FAULT STABILITY EVEN IN CASE OF CT SATURATION. NEUTRAL CURRENT CRITERION INSTANTANEOUS VALUES FOR FAULT RECORDING. DISTURBANCE FREE AND FAST DATA TRANSFER TO & FROM CENTRAL UNIT PHASE SEGREGATED MEASUREMENT REDUCE CT PERFORMANCE REQUIREMENTS BUILT IN HUMAN MACHINE INTERFACE BUILT IN BREAKER FAILURE FUNCTION. END FAULT PROTECTION FUNCTION REDUNT POWER SUPPLY DISTURBANCE RECORDER (1.5SCE @ 2.4KHZ) PER BAY UNIT BINARY INPUT : 20 BINARY OUTPUT : 16 FULLY NUMERICAL SIGNAL PROCESSING RATED CURRENT : 1/5A AUX. VOLTAGE : 48-250V DC RATED FREQUENCY : 60HZ	297 299	2	REB 500	ABB	REB500-BU03-V7-C1-A45-P1-F1-BB1-I00-R0-OC0-BFP1-EFPI-PD0-DR2-L0-T0

AS-BUILT BY _____ DATE _____			CONTRACT NO. <b>11131113/00</b>		JOB ORDER NO. <b>S-13656</b>		<b>LIST OF APPARATUS</b> <b>132KV BUSBAR PROT.N.MAIN-1 BU PANEL +B8P1-4</b> <b>S/S 8709 - 132/13.8KV IN AL-KHARJ CITY</b> <b>RIYADH SAUDI ARABIA</b>				<b>نقل الكهرباء</b> <b>الشركة الوطنية لنقل الكهرباء</b>  <b>National Grid sa</b>				
<b>01</b> <b>13 49</b> <b>FACTORY ASBUILT</b> <b>00</b> <b>13 05</b> <b>FOR APPROVAL</b>			DRAWN BY <b>RIZ</b> CHECKED BY <b>KVR</b> DATE STARTED <b>28.01.2013</b> DATE COMPLETED _____ OPRG. DEPT. <b>CTPD</b> ENG. DEPT. <b>AUT-PSAC</b>						INDEX PLANT NO. DRAWING NUMBER SHEET NO. REV. NO. <b>- C421 CD-322996</b> <b>SHT CONT.</b> <b>01</b> <b>02</b> <b>01</b>						





1	2	3	4	5	6	7	8	9	10	
A	SR. NO.	GA REF.	SCH. REF.	DESCRIPTION		SHT.	QTY.	TYPE	MAKE	ORDERING INFORMATION
	10			MCB 2 POLE 6A. FOR DC SUPPLY WITH 2NC AUXILIARY CONTACT		216	3	S282 UC K6 S2-H02	ABB	GH S282 0164 R0317 GH S270 1916 R0003
		U39.5001	Q1	D120 - ±BF1						
B		U39.5002	Q2	D230 - ±BF1						
	11	U39.5003	C01	CONVENIENCE OUTLET 10A, 127V AC		211	2	USM45 & USM45E	GRAND	74140 & 74180
			C02	CONVENIENCE OUTLET 10A, 220V AC						
C	12		C1.C2	MINIATURE CIRCUIT BREAKER, 2 POLE, 10A FOR CONVENIENCE OUTLET WITH AUXILIARY SWITCH, 1NO + 1NC CONTACTS		211	2	S202P-K10 S2C-H11L	ABB	2CDS 252 001 R0427 GH S270 1917 R0001
	13		C3	THERMOSTAT FOR SPACE HEATER. 5-60 C		211	1	SK 3110	RITTAL	SK3110
	14	U39.5004	TJ	TELEPHONE JACK 1GANG 4WIRE		211	1	EDF410	EDISON	EDF410
D	15		C7	ON/OFF SWITCH FOR SPACE HEATER		211	1	M2SS1-10B MCBH-10	ABB	1SFA 611 200 R1006 1SFA 611 605 R1101
	16		DS	DOOR SWITCH FOR CONTROL OF CUBICLE INTERNAL ILLUMINATION LAMP		211	1	LS30PT3802	ABB	1SBV 010213R 1202
	17		IL	INTERNAL ILLUMINATION CUBICLE LAMP SUITABLE FOR 127V AC, 60Hz SUPPLY		211	1	T4	SUNON	SP-20W
E	18		SH	SPACE HEATER. 150W. 120V. 60Hz		211	1	RICAA	GRUPPO	1FZEK006C001
F										

AS-BUILT BY _____ DATE _____		CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		LIST OF APPARATUS		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء National Grid sa	
01	13 49	FACTORY ASBUILT		DRAWN BY RIZ CHECKED BY KVR		132KV BUSBAR PROTN.MAIN-1 BU PANEL +BBP1-4		INDEX		PLANT NO.	DRAWING NUMBER
00	13 05	FOR APPROVAL		DATE STARTED 28.01.2013 DATE COMPLETED _____		S/S 8709 - 132/13.8KV IN AL-KHARJ CITY		-		C421	CD-322996
REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA		SHT		CONT.	REV. NO.
								L03		L04	01



LABEL REF.	LABEL ENGRAVING	MATERIALS	ENGRAVING	LABEL SIZE	LETTER SIZE
U08.5001	U08.5001 878+508F-1/BU-D120/1A	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50x15mm	4mm
U08.5002	U08.5002 878+508F-1/BU-D120/1B	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50x15mm	4mm
U15.5001	U15.5001 878+508F-1/BU-D230/1B	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50x15mm	4mm
U15.5002	U15.5001 878+508F-1/BU-D230/2B	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50x15mm	4mm
U22.5001	U22.5001 IS-1	ALUMINUM PAPER FOIL	BLACK LETTERS	50x10mm	3mm
U22.5002	U22.5002 IS-2	ALUMINUM PAPER FOIL	BLACK LETTERS	50x10mm	3mm
U22.5003	U22.5003 IS-3	ALUMINUM PAPER FOIL	BLACK LETTERS	50x10mm	3mm
U22.5004	U22.5004 IS-4	ALUMINUM PAPER FOIL	BLACK LETTERS	50x10mm	3mm
U26.101	U26.101 748F-1/D120/D230	ALUMINUM PAPER FOIL	BLACK LETTERS	50x10mm	3mm
U37.5001	U37.5001 DC SUPPLY MCB FOR D120	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50x15mm	4mm
U37.5002	U37.5002 DC SUPPLY MCB FOR D230	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50x15mm	4mm
U37.5003	U37.5003 C01-127V.C02-220V	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50x15mm	4mm
U37.5004	U37.5004 IJ	TRAFOLITE	BLACK LETTERS ON WHITE BACKGROUND	50x15mm	4mm

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<b>01</b>	<b>13 49</b>	<b>FACTORY ASBUILT</b>	DRAWN BY <b>RIZ</b> CHECKED BY <b>KVR</b>
<b>00</b>	<b>13 05</b>	<b>FOR APPROVAL</b>	DATE STARTED <b>28.01.2013</b> DATE COMPLETED _____
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. <b>CTPD</b> ENG. DEPT. <b>AUT-PSAC</b>

### LIST OF APPARATUS

**132KV BUSBAR PROTN.MAIN-1 BU PANEL +8BP1-4**  
**S/S 8709 - 132/13.8KV IN AL-KHARJ CITY**  
**RIYADH SAUDI ARABIA**

الشركة الوطنية لنقل الكهرباء



INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
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G	<table><tr><td colspan="3">AS-BUILT BY _____ DATE _____</td><td colspan="2">CONTRACT NO. 11131113/00</td><td colspan="2">JOB ORDER NO. S-13656</td><td colspan="3">LIST OF APPARATUS</td><td colspan="2">الشركة الوطنية لنقل الكهرباء National Grid sa</td></tr><tr><td>01</td><td>13 49</td><td>FACTORY ASBUILT</td><td colspan="2">DRAWN BY RIZ</td><td colspan="2">CHECKED BY KVR</td><td colspan="3">132KV BUSBAR PROTN.MAIN-1 BU PANEL +B8P1-4</td><td>INDEX</td><td>PLANT NO.</td></tr><tr><td>00</td><td>13 05</td><td>FOR APPROVAL</td><td colspan="2">DATE STARTED 28.01.2013</td><td colspan="2">DATE COMPLETED _____</td><td colspan="3">S/S 8709 - 132/13.8KV IN AL-KHARJ CITY</td><td>DRAWING NUMBER</td><td>SHEET NO.</td></tr><tr><td>REV. NO.</td><td>DATE</td><td>DESCRIPTION</td><td colspan="2">OPRG. DEPT. CTPD</td><td colspan="2">ENG. DEPT. AUT-PSAC</td><td colspan="3">RIYADH SAUDI ARABIA</td><td>- C421</td><td>CD-322996</td></tr><tr><td colspan="10"></td><td>CONT.</td><td>REV. NO.</td></tr><tr><td colspan="10"></td><td>L06000</td><td>01</td></tr></table>										AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		LIST OF APPARATUS			الشركة الوطنية لنقل الكهرباء National Grid sa		01	13 49	FACTORY ASBUILT	DRAWN BY RIZ		CHECKED BY KVR		132KV BUSBAR PROTN.MAIN-1 BU PANEL +B8P1-4			INDEX	PLANT NO.	00	13 05	FOR APPROVAL	DATE STARTED 28.01.2013		DATE COMPLETED _____		S/S 8709 - 132/13.8KV IN AL-KHARJ CITY			DRAWING NUMBER	SHEET NO.	REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. CTPD		ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA			- C421	CD-322996											CONT.	REV. NO.											L06000	01
AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		LIST OF APPARATUS			الشركة الوطنية لنقل الكهرباء National Grid sa																																																																								
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VECTOR NGD200

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PROTECTION AND SUBSTATION AUTOMATION SYSTEMS  
WBS NO: S-13656

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414, AL-KHARJ ROAD  
SECOND INDUSTRIAL CITY  
RIYADH-11383 K.S.A

CONTRACTOR : ABB Contracting Company  
CLIENT : National Gridsa  
PROJECT : CONSTRUCTION OF NEW 132/13.8kV SS 8709 IN AL-KHARJ CITY  
SUBSTATION : S/S 8709  
CONTRACT NO. : 11131113/00  
TITLE : SCHEMATICS DRAWINGS – +BBP1-4  
[132KV BUSBAR PROTECTION MAIN-1 BAY UNIT PANEL]

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### COVER SHEET

**132KV BUSBAR PROT.N.MAIN-1 BU PANEL +BBP1-4**  
**S/S 8709 - 132/13.8KV IN AL-KHARJ CITY**  
**RIYADH SAUDI ARABIA**

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INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
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CONTENTS	ABB SHT.NO.	REV.00	REV.01	REV.02
COVER SHEET	000	X	X	
CONTENTS SHEET	001	X	X	
GRAPHICAL SYMBOLS FOR DIAGRAMS	011	X	X	
GRAPHICAL SYMBOLS FOR DIAGRAMS	012	X	X	
COMMON LEGEND	013	X	X	
FERRULE AND WIRING DETAILS	014	X	X	
DRAWING REFERENCES	015	X	X	
DRAWING REFERENCES	016	X	X	
PRIMARY SYSTEM	051-052	X	X	
AC SUPPLY FOR ILLUMINATION & POWER SOCKET	211	X	X	
CUB. LIGHTING, HEATER & SOCKET ALARM CKT.	212	X	X	
DC SUPPLY DISTRIBUTION	216	X	X	
CURRENT TRANSFORMER INPUTS -87B+50BF-1/BU-D120/1A	221	X	X	
CURRENT TRANSFORMER INPUTS -87B+50BF-1/BU-D120/1B	222	X	X	
CURRENT TRANSFORMER INPUTS -87B+50BF-1/BU-D230/1B	223	X	X	
CURRENT TRANSFORMER INPUTS -87B+50BF-1/BU-D230/2B	224	X	X	
87B+50BF-1/BU-D120/1A PROTN.RELAY-BINARY INPUTS	231	X	X	
87B+50BF-1/BU-D120/1A PROTN.RELAY-BINARY INPUTS	232	X	X	
87B+50BF-1/BU-D120/1B PROTN.RELAY-BINARY INPUTS	233	X	X	
87B+50BF-1/BU-D120/1B PROTN.RELAY-BINARY INPUTS	234	X	X	
CBF-1 & BUSBAR PROTN-1 TRIP RELAY CIRCUIT	235	X	X	
87B+50BF-1/BU-D230/1B PROTN.RELAY-BINARY INPUTS	236	X	X	
87B+50BF-1/BU-D230/1B PROTN.RELAY-BINARY INPUTS	237	X	X	
87B+50BF-1/BU-D230/2B PROTN.RELAY-BINARY INPUTS	238	X	X	
87B+50BF-1/BU-D230/2B PROTN.RELAY-BINARY INPUTS	239	X	X	
CBF-1 & BUSBAR PROTN-1 TRIP RELAY CIRCUIT	240	X	X	

CONTENTS	ABB SHT.NO.	REV.00	REV.01	REV.02
COMMON ALARM CIRCUITS	292	X	X	
BLOCK REFERENCE 87B+50BF-1/BU-D120/1A	293	X	X	
BLOCK REFERENCE 87B+50BF-1/BU-D120/1A	294	X	X	
BLOCK REFERENCE 87B+50BF-1/BU-D120/1B	295	X	X	
BLOCK REFERENCE 87B+50BF-1/BU-D120/1B	296	X	X	
BLOCK REFERENCE 87B+50BF-1/BU-D230/1B	297	X	X	
BLOCK REFERENCE 87B+50BF-1/BU-D230/1B	298	X	X	
BLOCK REFERENCE 87B+50BF-1/BU-D230/2B	299	X	X	
BLOCK REFERENCE 87B+50BF-1/BU-D230/2B	300	X	X	
TERMINAL BLOCKS REFERENCE	301	X	X	

AS-BUILT BY _____ DATE _____		CONTRACT NO. <b>11131113/00</b>	JOB ORDER NO. <b>S-13656</b>	<b>CONTENTS SHEET</b>		<b>الشركة الوطنية لنقل الكهرباء</b> <b>نقل الكهرباء</b> National Grid sa	
01	13 49	FACTORY ASBUILT	DRAWN BY <b>RIZ</b> CHECKED BY <b>KVR</b>	132KV BUSBAR PROTN.MAIN-1 BU PANEL +88P1-4		INDEX	PLANT NO.
00	13 05	FOR APPROVAL	DATE STARTED <b>28.01.2013</b> DATE COMPLETED _____	S/S 8709 - 132/13.8KV IN AL-KHARJ CITY			DRAWING NUMBER
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. <b>CTPD</b> ENG. DEPT. <b>AUT-PSAC</b>	RIYADH SAUDI ARABIA		-	CD-322997
							SHEET NO. SHT CONT. 001 011
							REV. NO. 01

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SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	FRAME CONNECTION		MAIN CONTACT OF A CIRCUIT BREAKER PASSING MAKE CONTACT CLOSING MOMENTARILY DURING OPERATION AND RELEASE		RELAY WITH TWO MAKE CONTACTS, ONE OF THEM DELAYED WHEN OPERATING
	EARTH CONNECTION		BREAK CONTACT DELAYED WHEN OPERATING		RELAY WITH TWO ACTUATORS AND A TWO STABLE POSITIONS
	RESISTOR		MAKE CONTACT DELAYED WHEN RELEASING		SIGNALLING LAMP
	VARIABLE RESISTOR		TWO MECHANICAL LINKS CROSSING WITHOUT CONNECTION		MECHANICAL INDICATOR WITH AUTOMATIC RESET
	RESISTOR WITH PRESET ADJUSTMENT		JUNCTION OF MECHANICAL LINKS		MECHANICAL INDICATOR WITH NON-AUTOMATIC RESET
	CAPACITOR		AUTOMATIC RESET		ELECTRICALLY CONTROLLED MECHANICAL INDICATOR WITH AUTOMATIC RESET
	SEMICONDUCTOR DIODE USED AS A CAPACITIVE DEVICE		NON-AUTOMATIC RESET		ELECTRICALLY CONTROLLED MECHANICAL INDICATOR WITH NON-AUTOMATIC RESET
	OPEN CONTACT, MAKE CONTACT		SWITCHING DEVICE WITH MANUAL OPERATION AND WITH AUTOMATIC RESET		RELAY WITH MAKE CONTACT
	CLOSED CONTACT, BREAK CONTACT		SWITCHING DEVICE WITH MANUAL OPERATION AND WITH NON-AUTOMATIC RESET		RELAY WITH CHANGE-OVER CONTACT
	CHANGE-OVER CONTACT, BREAK BEFORE MAKE		CHANGE-OVER SWITCHING DEVICE WITH MANUAL CONTROL		RELAY WITH MAKE CONTACT, DELAYED WHEN OPERATING
	MAKE CONTACT WHICH IS EARLY WHEN OPERATING AND LATE WHEN RELEASING		RELAY WITH MAKE CONTACT, DELAYED WHEN RELEASING		RELAY WITH MAKE CONTACT, DELAYED WHEN OPERATING AND RELEASING
	BREAK CONTACT WHICH IS LATE WHEN OPERATING AND EARLY WHEN RELEASING				
	SWITCHING DEVICE WITH MANUAL CONTROL				
	MAKE CONTACT DELAYED WHEN OPERATING				
	BREAK CONTACT DELAYED WHEN RELEASING				
	MAKE CONTACT DELAYED WHEN OPERATING AND RELEASING				
	MAIN CONTACT OF A SWITCH DISCONNECTOR				
	MAIN CONTACT OF A DISCONNECTOR				

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		GRAPHICAL SYMBOLS FOR DIAGRAMS		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء	
DRAWN BY RIZ			CHECKED BY KVR		132KV BUSBAR PROTN.MAIN-1 BU PANEL +8BP1-4			S/S 8709 - 132/13.8KV IN AL-KHARJ CITY		INDEX		
DATE STARTED 28.01.2013			DATE COMPLETED _____		RIYADH			SAUDI ARABIA		PLANT NO.		
PRGR. DEPT. CTPD			ENG. DEPT. AUT-PSAC							DRAWING NUMBER		
REV. NO.			DATE							SHEET NO.		
DESCRIPTION										REV. NO.		
										SHY CONT.		
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01		13 49		FACTORY ASBUILT		28.01.2013		CD-322997		01	
00		13 05		FOR APPROVAL							



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### LEGENDS

±R1	DC SUPPLY - MAIN PROTECTION
±R2	DC SUPPLY - SECONDARY PROTECTION
±R3	DC SUPPLY - BACK UP PROTECTION
±IT	DC SUPPLY - INTER TRIP
FL	DC SUPPLY - FLASHING CIRCUIT
BB RS±	DC SUPPLY - BUS BAR - PROTECTION RESET
BB CBF±/CBF±	DC SUPPLY - CBF PROTECTION
R	RESET BUS - ALARM SYSTEM
CR	CONTROL ROOM
ECC	ENERGY CONTROL CENTRE
LOCAL	THE LOCATION OF CONTROLLED DEVICE
REMOTE	ANY OTHER LOCATION NOT LOCAL
ON	CB NORMALLY OPEN AUXILIARY CONTACT
OFF	CB NORMALLY CLOSED AUXILIARY CONTACT
A	COMMON
T	TEST POSITION
S	SERVICE POSITION
CS	CLOSE IN SERVICE POSITION
CT	CLOSE IN TEST POSITION
LS	LOCAL SERVICE
LT	LOCAL TEST
LC	LOCAL CLOSE
LO	LOCAL OPEN
RO	REMOTE OPEN
OP	OPERATE
RE	RESET

### NOTES

#### LABELS

WHITE LABEL WITH BLACK LETTERING WILL BE PROVIDED FOR ALL MOUNTED APPARATUS EQUIPMENT IDENTIFICATION AND FUNCTION REFERENCE LABEL WILL BE PROVIDED FOR FRONT MOUNTED EQUIPMENTS OF THE PANEL AND EQUIPMENT IDENTIFICATION LABEL WILL BE PROVIDED FOR INTERNALLY MOUNTED EQUIPMENTS

#### WIRING

PVC INSULATED 600V GRADE  
2.5 SQ.mm. YELLOW COLOURED FOR CT CIRCUITS  
2.5 SQ.mm. RE COLOURED FOR VT CIRCUITS  
1.5 SQ.mm. GREY COLOURED FOR DC SUPPLY, SCADA AND CONTROL CIRCUITS  
2.5 SQ.mm. BLACK COLOURED FOR AVC AND AC CIRCUITS  
2.5 SQ.mm. YELLOW/GREEN COLOURED FOR EARTHING CONNECTIONS  
FOLLOWING MARKERS SHALL BE PROVIDED ON FOLLOWING WIRES:  
+ SIGN FOR DC + WIRE  
- SIGN FOR DC - WIRE

#### LUGS

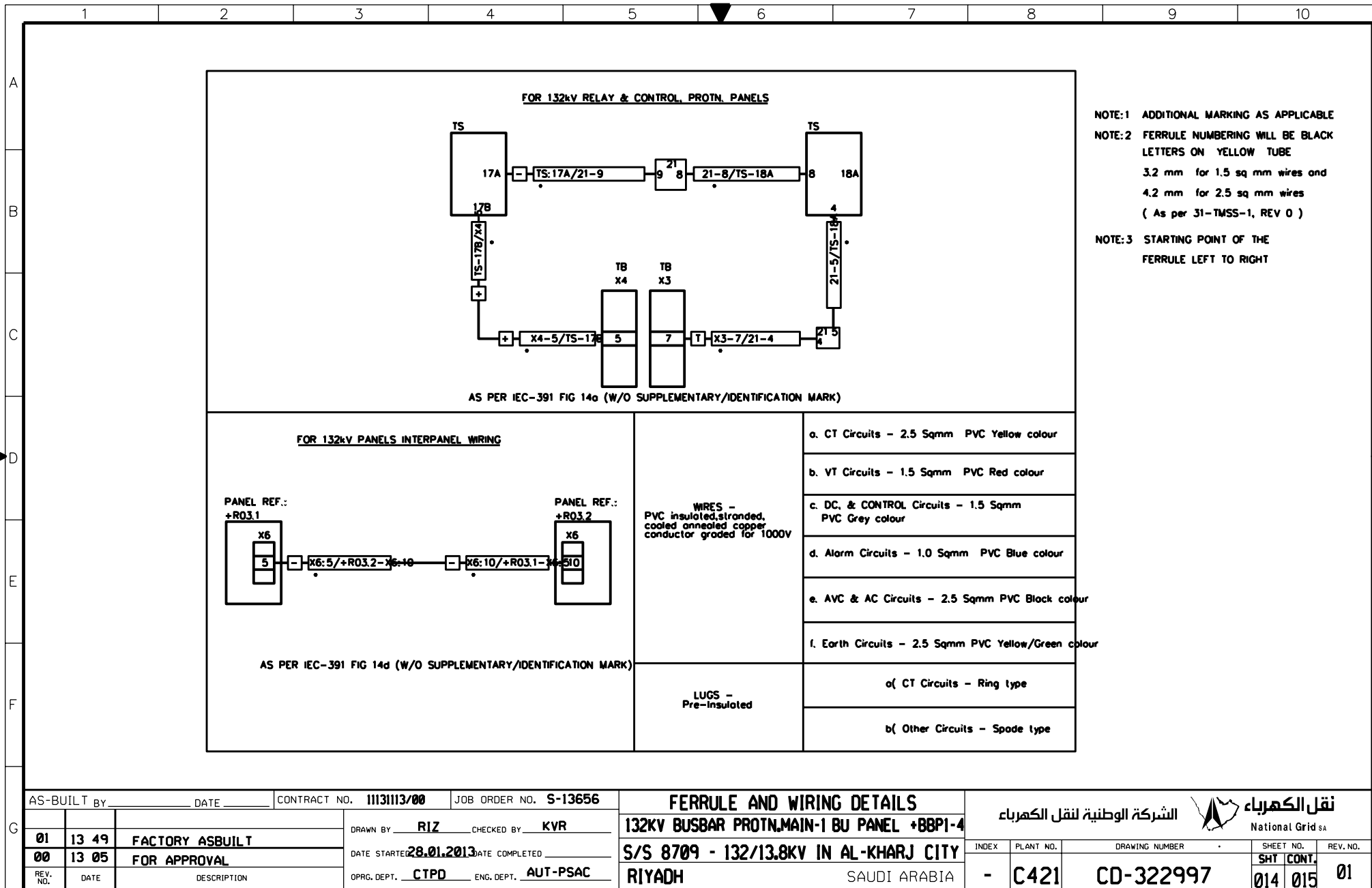
A. CT CIRCUITS- RING TYPE  
B. OTHER CIRCUITS - SPADE TYPE

#### FERULLING

YELLO TUBE 3.2 mm FOR 1.5SQ mm WIRES AND 4.2 FOR 2.5 SQ mm WIRES  
( AS PER 31 - TMSS-1, RE.0 )


AS-BUILT BY _____ DATE _____		CONTRACT NO. <b>11131113/00</b>	JOB ORDER NO. <b>S-13656</b>	<b>COMMON LEGEND</b>		<b>نقل الكهرباء</b> الشركة الوطنية لنقل الكهرباء National Grid sa	
01	13 49	FACTORY ASBUILT	DRAWN BY <b>RIZ</b> CHECKED BY <b>KVR</b>	132KV BUSBAR PROT.N.MAIN-1 BU PANEL +BBP1-4		INDEX	PLANT NO.
00	13 05	FOR APPROVAL	DATE STARTED <b>28.01.2013</b> DATE COMPLETED _____	S/S 8709 - 132/13.8KV IN AL-KHARJ CITY		DRAWING NUMBER	SHEET NO.
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. <b>CTPD</b> ENG. DEPT. <b>AUT-PSAC</b>	RIYADH SAUDI ARABIA		- C421	CD-322997
							013 014 01

NG/D2-D (2012/01)  
DMS VECTOR NGD200

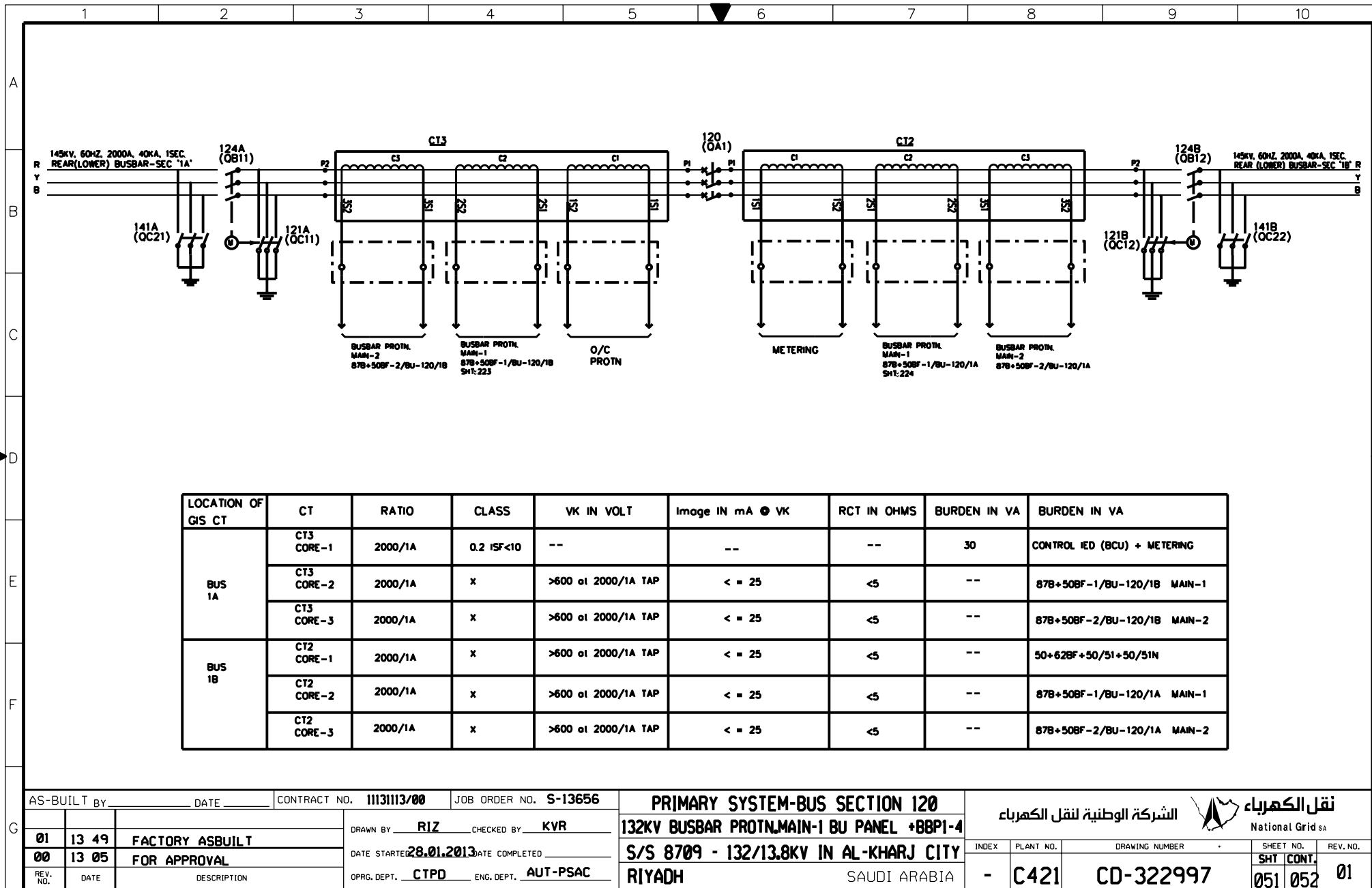


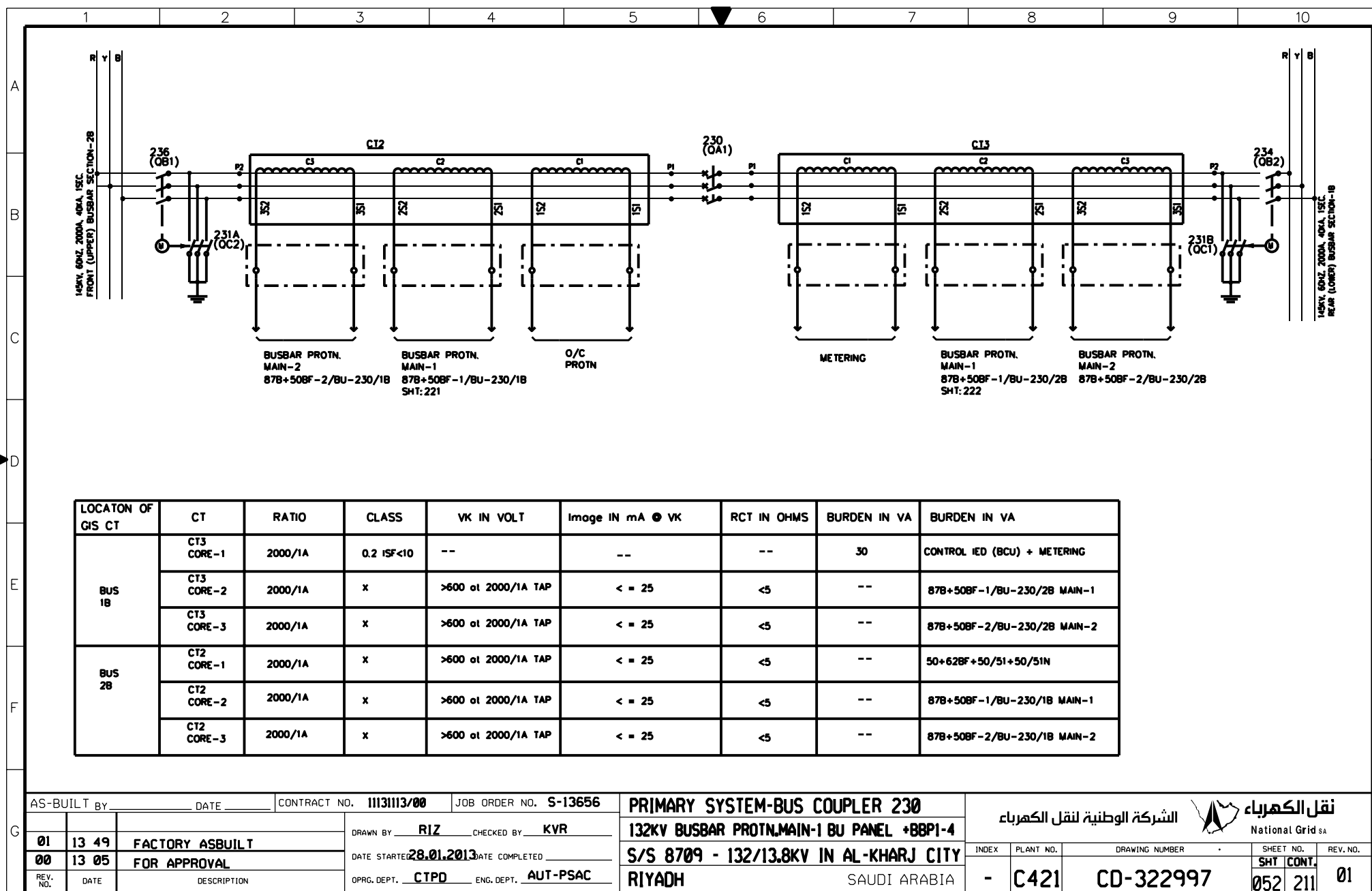
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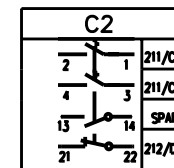
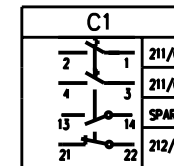
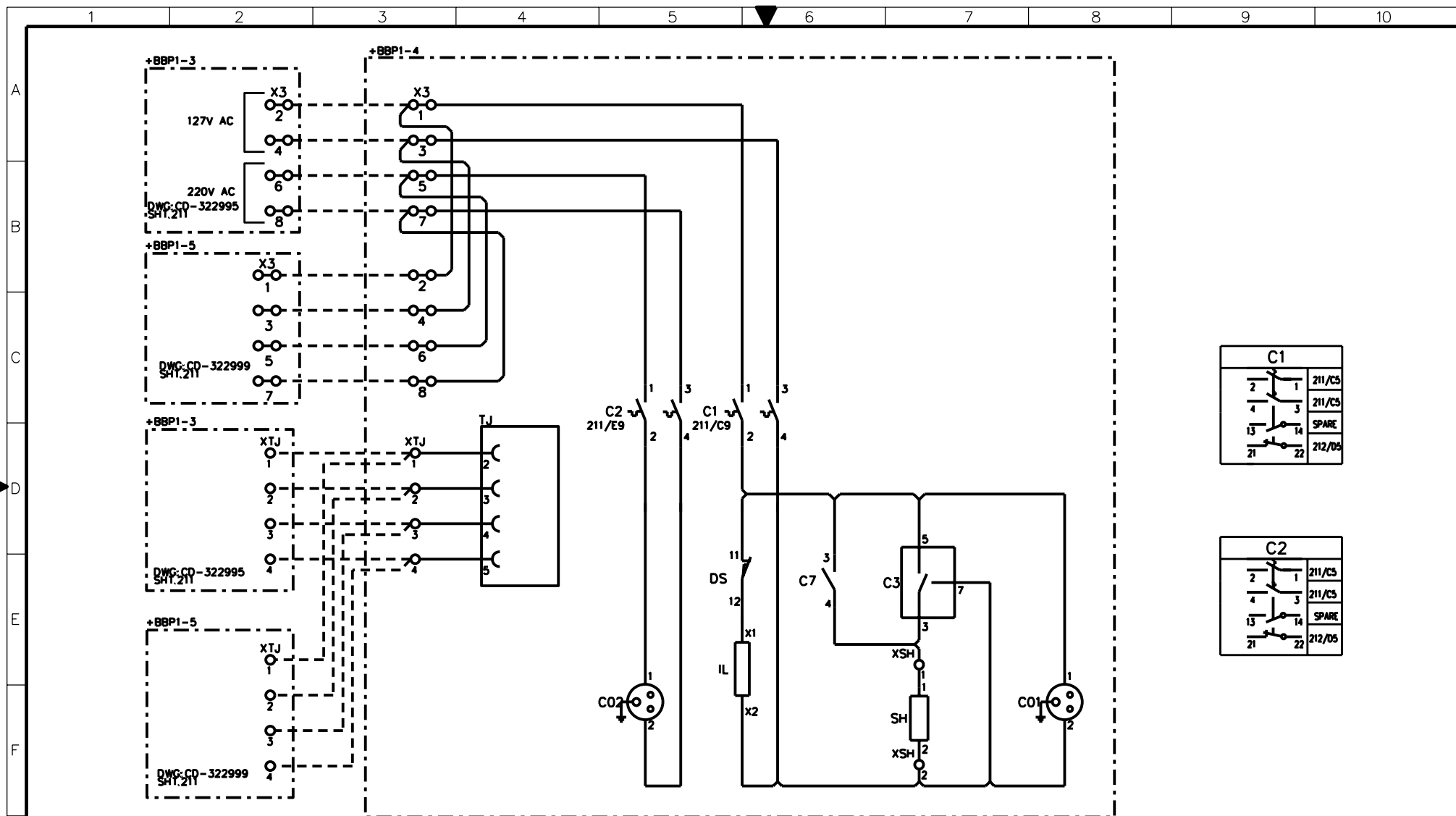


MANUFACTURER	SCHEMATICS DWG.NO	PANEL DESCRIPTION	PANEL REFERENCE
 PROTECTION & SUBSTATION AUTOMATION		SS 8709 13.8KV RELAY PANELS	
	CD-322952	13.8KV Capacitor Bank-1 Protection Panel	+CBP-1
	CD-322954	13.8KV Capacitor Bank-2 Protection Panel	+CBP-2
	CD-322956	13.8KV Capacitor Bank-2 Protection Panel	+CBP-3
	CD-322958	13.8 KV ACCS PANEL	+ACCS
	CD-322962	13.8KV ACSE PANEL	+ACSE
	CD-322968	13.8KV Under Voltage Load Shedding Panel	+UVLS
	CD-322964	13.8KV Under Frequency Load Shedding Panel-1	+UFLS01
	CD-322966	13.8KV Under Frequency Load Shedding Panel-2	+UFLS02

AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		DRAWING REFERENCES		الشركة الوطنية لنقل الكهرباء National Grid sa	
01 13 49 FACTORY ASBUILT			DRAWN BY RIZ CHECKED BY KVR		132KV BUSBAR PROTN.MAIN-1 BU PANEL +8BP1-4					
00 13 05 FOR APPROVAL			DATE STARTED 28.01.2013 DATE COMPLETED _____		S/S 8709 - 132/13.8KV IN AL-KHARJ CITY					
REV. NO. DATE DESCRIPTION			OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC		RIYADH SAUDI ARABIA				INDEX PLANT NO. DRAWING NUMBER SHEET NO. CONT. REV. NO.	
									- C421 CD-322997 016 051 01	







AS-BUILT BY \_\_\_\_\_ DATE \_\_\_\_\_ CONTRACT NO. **1113113/00** JOB ORDER NO. **S-13656**

01	13 49	FACTORY ASBUILT
00	13 05	FOR APPROVAL
REV. NO.	DATE	DESCRIPTION

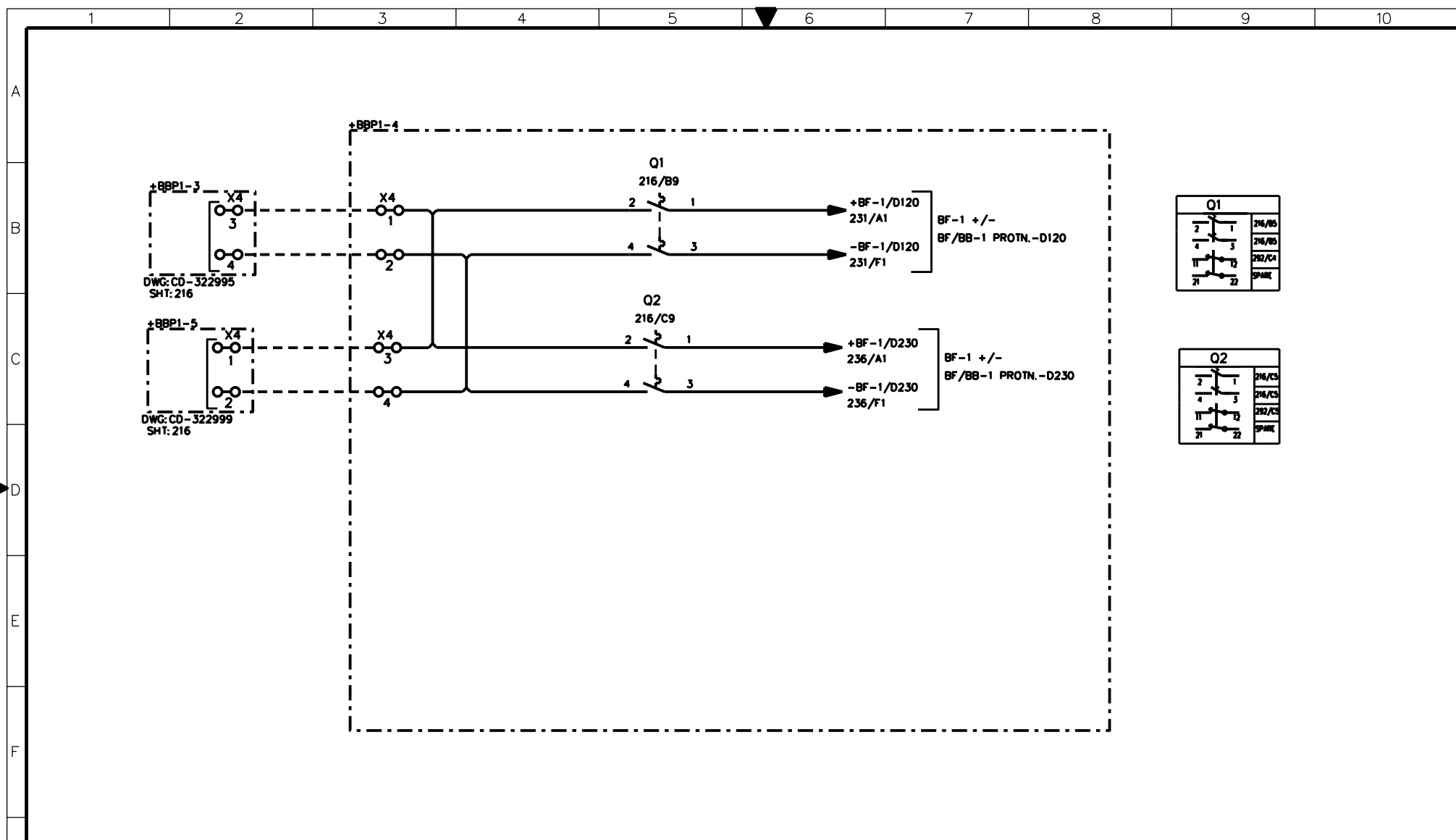
DRAWN BY **RIZ** CHECKED BY **KVR**  
 DATE STARTED **28.01.2013** DATE COMPLETED \_\_\_\_\_  
 OPRG. DEPT. **CTPD** ENG. DEPT. **AUT-PSAC**

**AC SUPPLY FOR ILLUMINATION & POWER SOCKET**  
**132KV BUSBAR PROTN. MAIN-1 BU PANEL +BBP1-4**  
**S/S 8709 - 132/13.8KV IN AL-KHARJ CITY**  
**RIYADH SAUDI ARABIA**

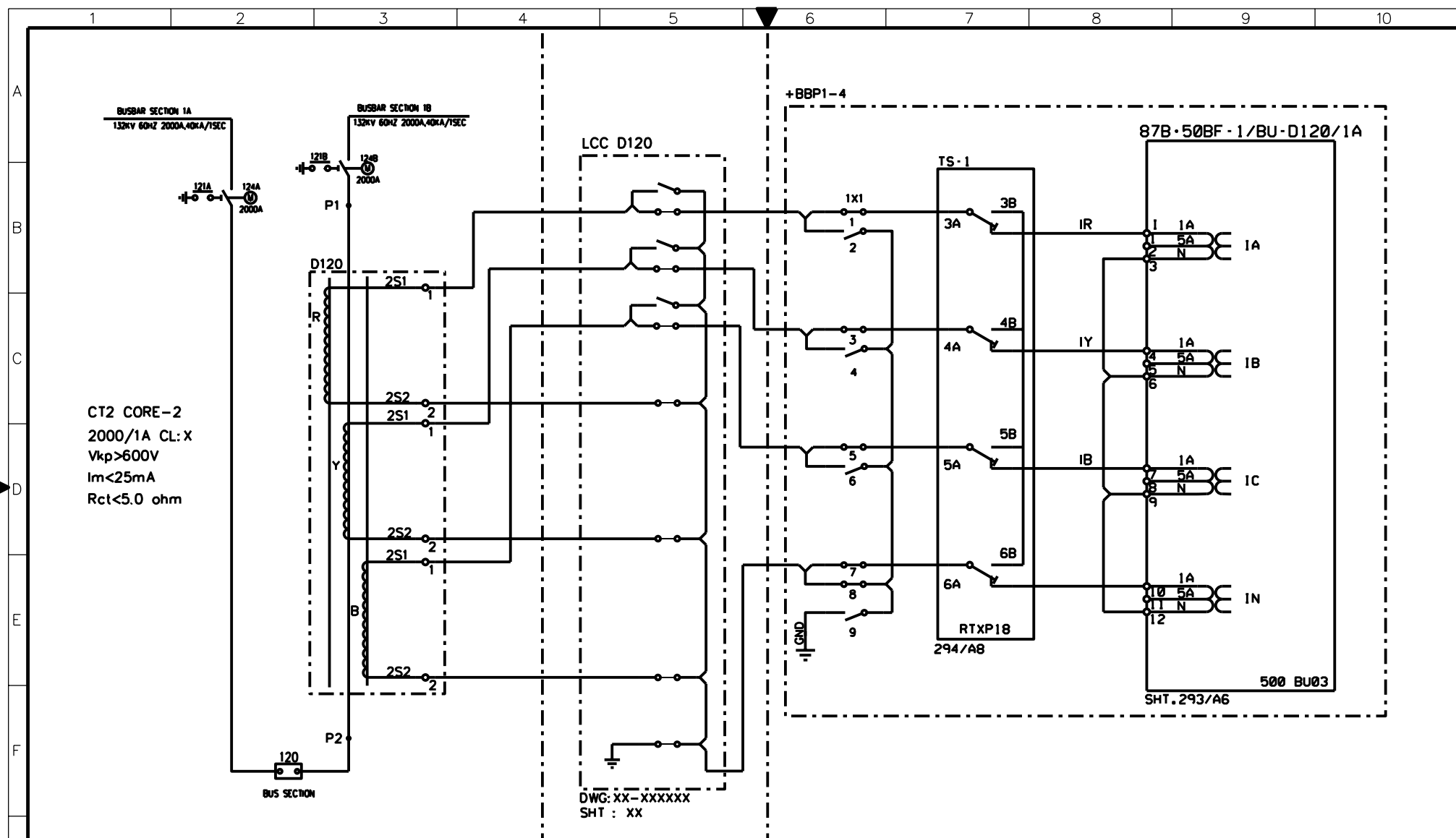
الشركة الوطنية لنقل الكهرباء		نقل الكهرباء		National Grid sa	
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.	
-	C421	CD-322997	SHT 211	CONT. 212	01





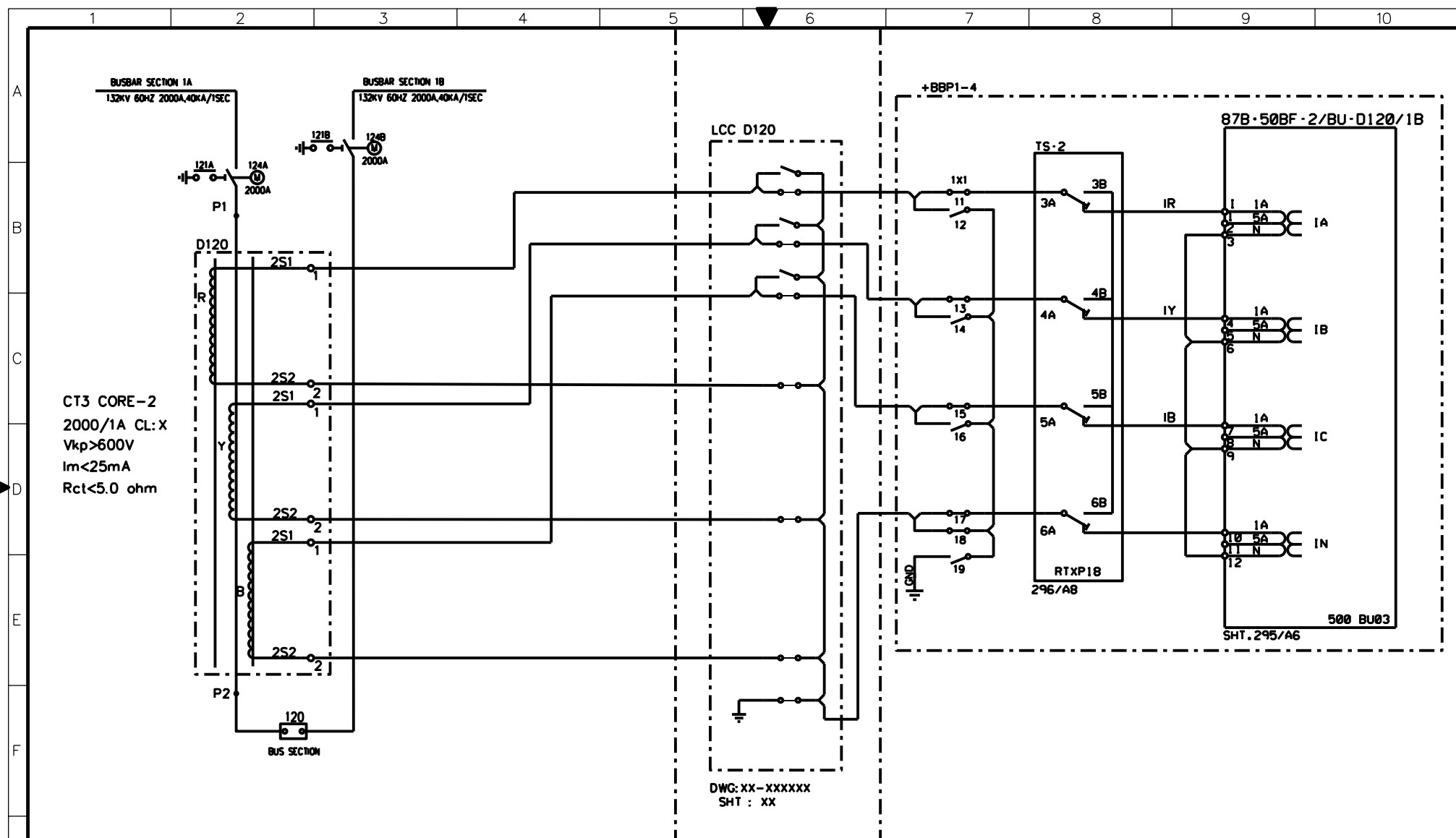


AS-BUILT BY _____ DATE _____			CONTRACT NO. 11131113/00		JOB ORDER NO. S-13656		DC SUPPLY DISTRIBUTION			نقل الكهرباء الشركة الوطنية لنقل الكهرباء National Grid sa				
			DRAWN BY RIZ CHECKED BY KVR			132KV BUSBAR PROTN.MAIN-1 BU PANEL +BBP1-4			INDEX PLANT NO. DRAWING NUMBER SHEET NO. REV. NO.					
01 13 49			FACTORY ASBUILT			S/S 8709 - 132/13.8KV IN AL-KHARJ CITY			- C421 CD-322997 216 221 01					
00 13 05			FOR APPROVAL			RIYADH SAUDI ARABIA								
REV. NO. DATE DESCRIPTION			OPRG. DEPT. CTPD ENG. DEPT. AUT-PSAC											

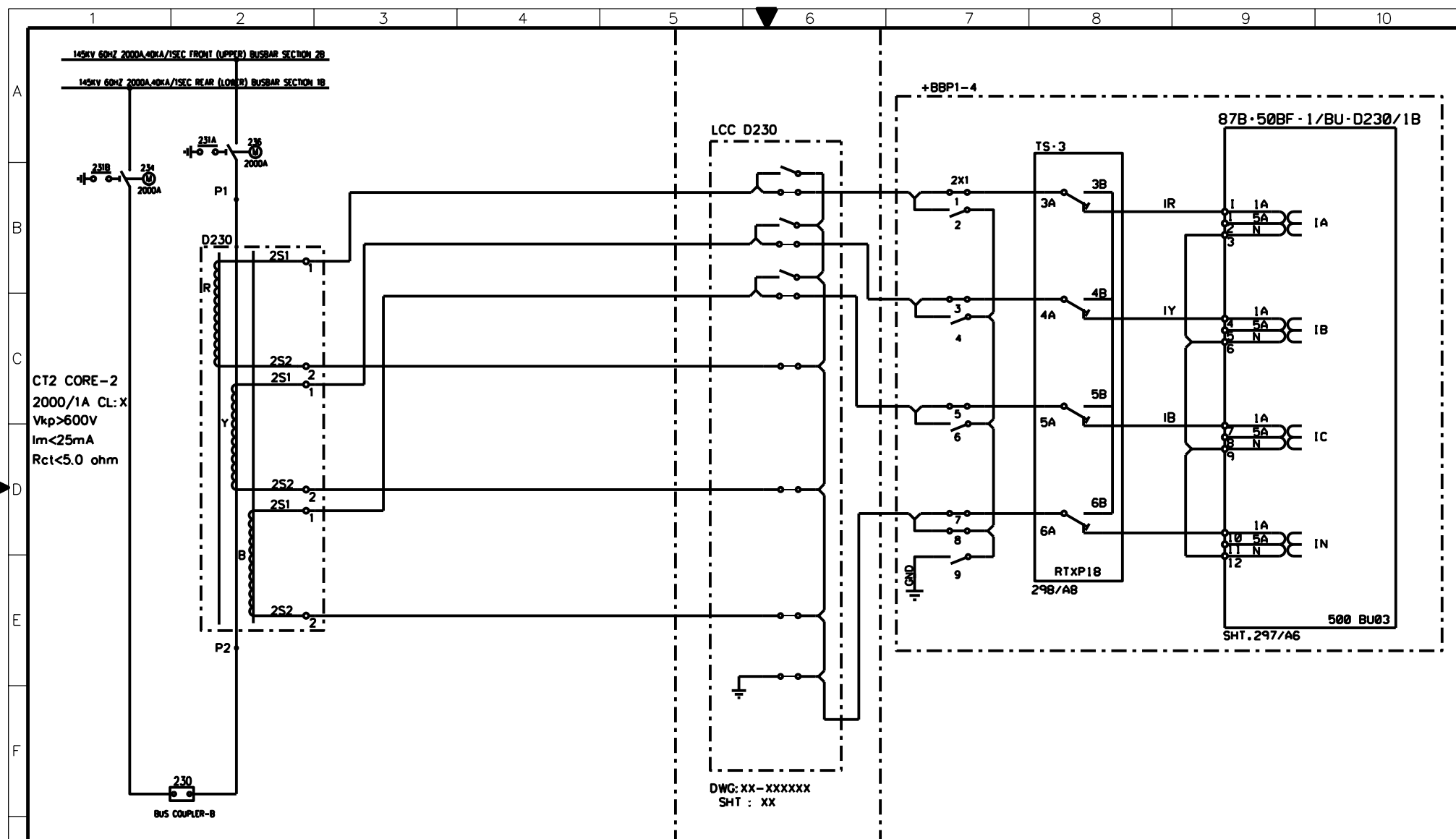


AS-BUILT BY _____ DATE _____		CONTRACT NO. <b>11131113/00</b>	JOB ORDER NO. <b>S-13656</b>	<b>CURRENT TRANSFORMER INPUTS - 87B+50BF-1/BU-D120/1A</b>		الشركة الوطنية لنقل الكهرباء	
<b>01</b>	<b>13 49</b>	<b>FACTORY ASBUILT</b>	DRAWN BY <b>RIZ</b> CHECKED BY <b>KVR</b>	<b>132KV BUSBAR PROTN. MAIN-1 BU PANEL +BBP1-4</b>		National Grid sa	
<b>00</b>	<b>13 05</b>		DATE STARTED <b>28.01.2013</b> DATE COMPLETED _____	<b>S/S 8709 - 132/13.8KV IN AL-KHARJ CITY</b>		INDEX	PLANT NO.
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. <b>CTPD</b> ENG. DEPT. <b>AUT-PSAC</b>	<b>RIYADH SAUDI ARABIA</b>		-	<b>C421</b>
						DRAWING NUMBER	SHEET NO.
						<b>CD-322997</b>	<b>221</b>
						SHT CONT.	REV. NO.
						<b>222</b>	<b>01</b>

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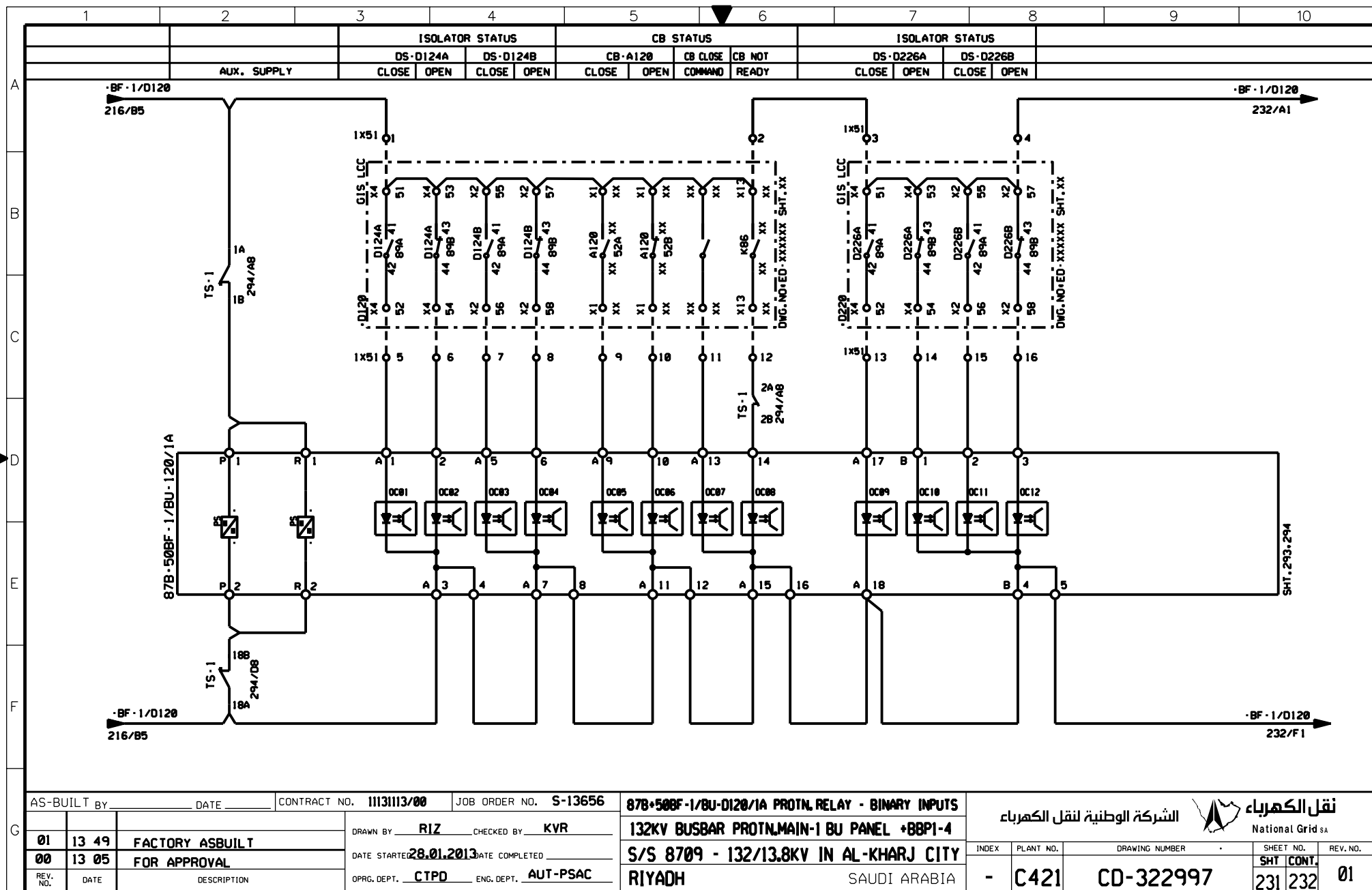


AS-BUILT BY _____ DATE _____		CONTRACT NO. <b>11131113/00</b>	JOB ORDER NO. <b>S-13656</b>	<b>CURRENT TRANSFORMER INPUTS -87B-50BF-1/BU-D120/1B</b>		<b>نقل الكهرباء</b> الشركة الوطنية لنقل الكهرباء National Grid sa	
<b>01</b>	<b>13 49</b>	<b>FACTORY ASBUILT FOR APPROVAL</b>	DRAWN BY <b>RIZ</b> CHECKED BY <b>KVR</b>	<b>132KV BUSBAR PROT.N.MAIN-1 BU PANEL +BBP1-4</b>		INDEX	PLANT NO.
<b>00</b>	<b>13 05</b>		DATE STARTED <b>28.01.2013</b> DATE COMPLETED _____	<b>S/S 8709 - 132/13.8KV IN AL-KHARJ CITY</b>		DRAWING NUMBER	SHEET NO.
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. <b>CTPD</b> ENG. DEPT. <b>AUT-PSAC</b>	<b>R/AYADH</b>		<b>-</b>	<b>C421</b>
				<b>SAUDI ARABIA</b>		<b>CD-322997</b>	<b>222/223</b>
							<b>01</b>



AS-BUILT BY _____ DATE _____		CONTRACT NO. <b>11131113/00</b>	JOB ORDER NO. <b>S-13656</b>	<b>CURRENT TRANSFORMER INPUTS -87B-50BF-1/BU-D230/1B</b>		<b>نقل الكهرباء</b> الشركة الوطنية لنقل الكهرباء National Grid sa	
<b>01</b>	<b>13 49</b>	<b>FACTORY ASBUILT FOR APPROVAL</b>	DRAWN BY <b>RIZ</b> CHECKED BY <b>KVR</b>	<b>132KV BUSBAR PROTN.MAIN-1 BU PANEL +BBP1-4</b>		INDEX	PLANT NO.
<b>00</b>	<b>13 05</b>		DATE STARTED <b>28.01.2013</b> DATE COMPLETED _____	<b>S/S 8709 - 132/13.8KV IN AL-KHARJ CITY</b>		DRAWING NUMBER	SHEET NO.
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. <b>CTPD</b> ENG. DEPT. <b>AUT-PSAC</b>	<b>R/YADH SAUDI ARABIA</b>		<b>- C421</b>	<b>CD-322997</b>
						SHT	CONT.
						<b>223</b>	<b>224</b>
						<b>01</b>	

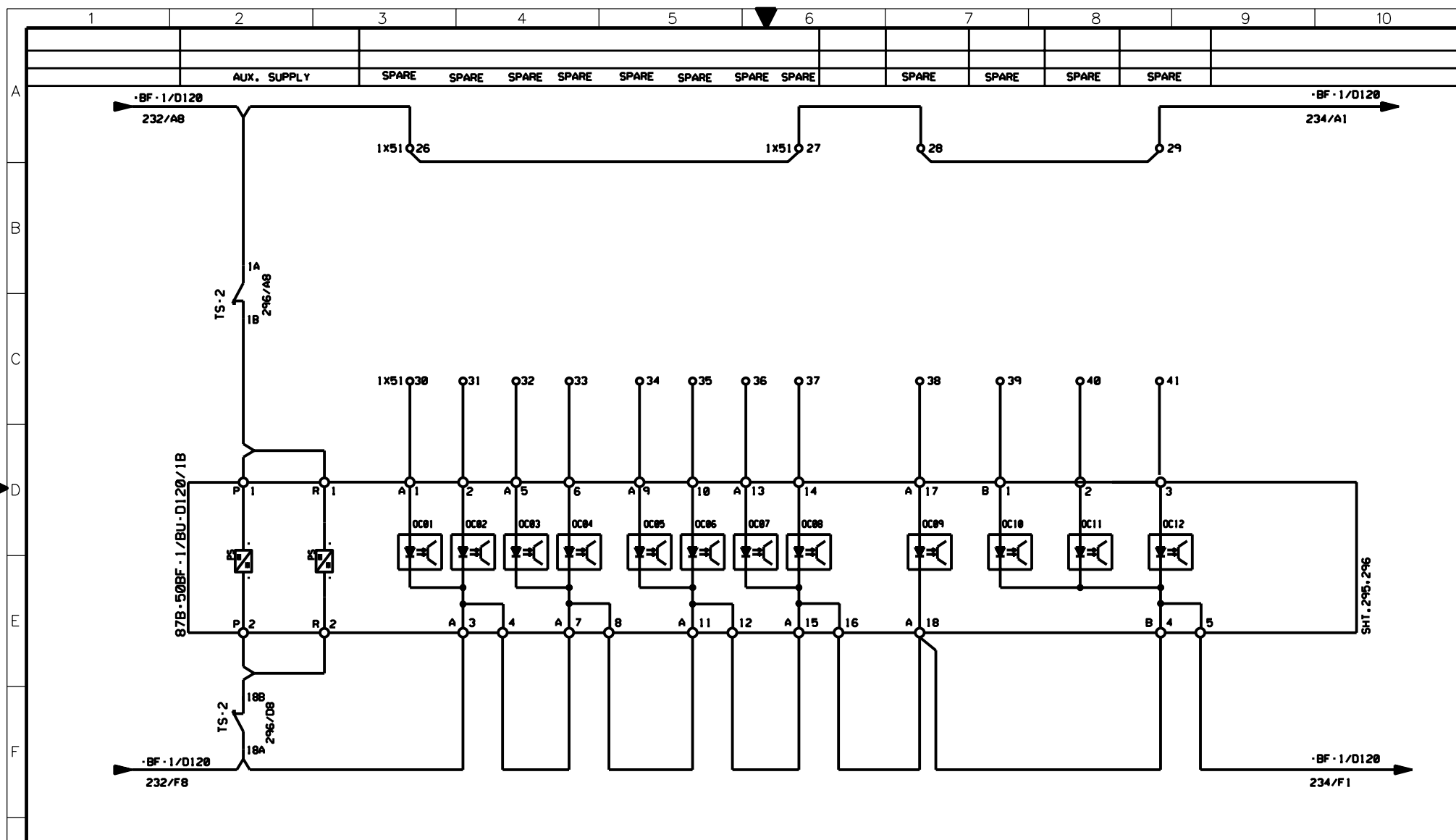




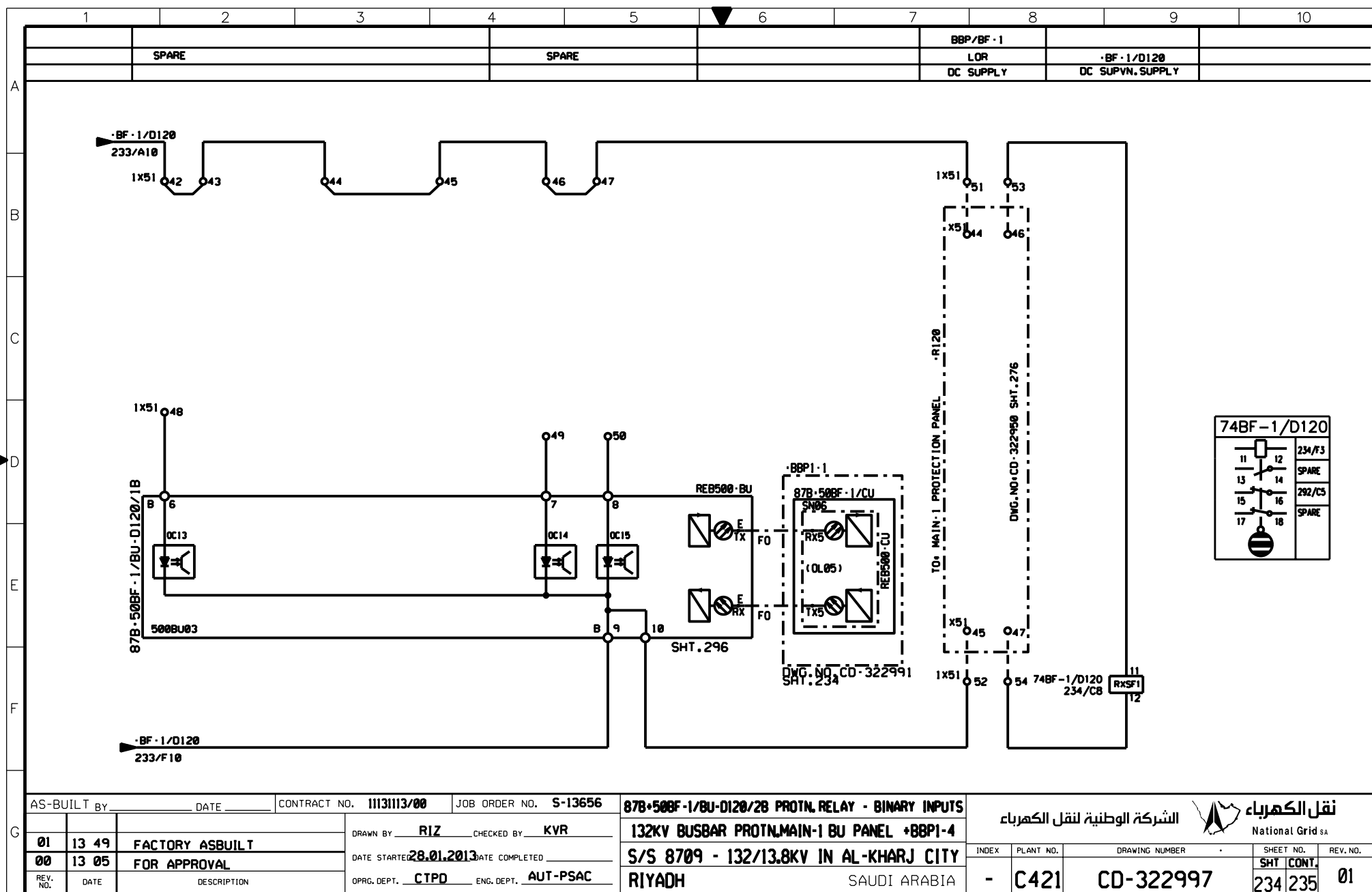
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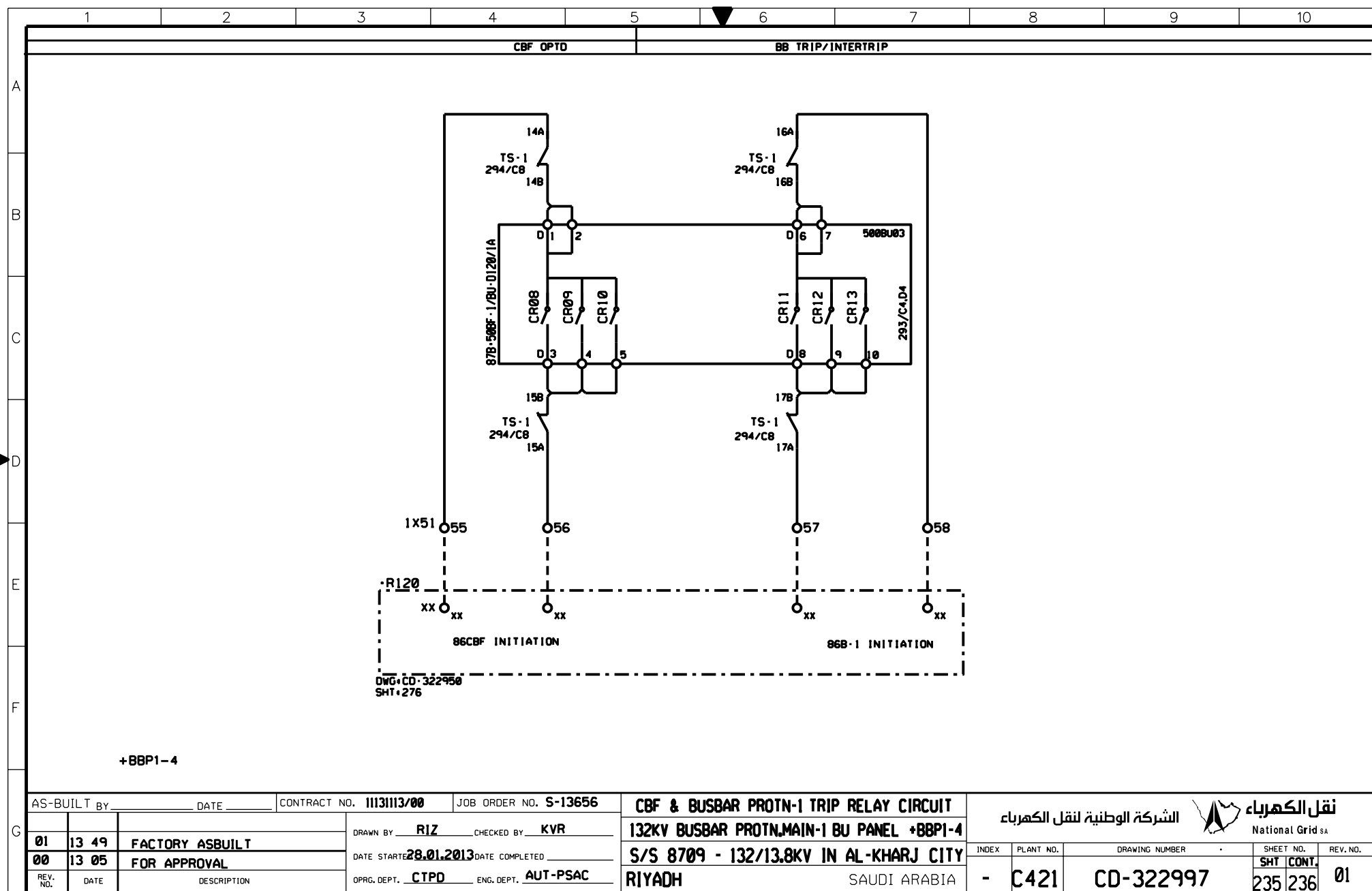






AS-BUILT BY _____ DATE _____		CONTRACT NO. <b>11131113/00</b>	JOB ORDER NO. <b>S-13656</b>	<b>87B-50BF-1/BU-D120/28 PROTN.RELAY - BINARY INPUTS</b>		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء	
DRAWN BY <b>RIZ</b> CHECKED BY <b>KVR</b>		DATE STARTED <b>28.01.2013</b> DATE COMPLETED _____		<b>132KV BUSBAR PROTN.MAIN-1 BU PANEL +BBP1-4</b>		National Grid sa		SHT CONT.	
DATE STARTED <b>28.01.2013</b> DATE COMPLETED _____		OPRG. DEPT. <b>CTPD</b> ENG. DEPT. <b>AUT-PSAC</b>		<b>S/S 8709 - 132/13.8KV IN AL-KHARJ CITY</b>		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.
REV. NO. <b>01</b> DATE <b>13 49</b>		DESCRIPTION <b>FACTORY ASBUILT</b>		<b>RIYADH</b>		-	C421	CD-322997	233 234
REV. NO. <b>00</b> DATE <b>13 05</b>		DESCRIPTION <b>FOR APPROVAL</b>		<b>SAUDI ARABIA</b>				<b>01</b>	





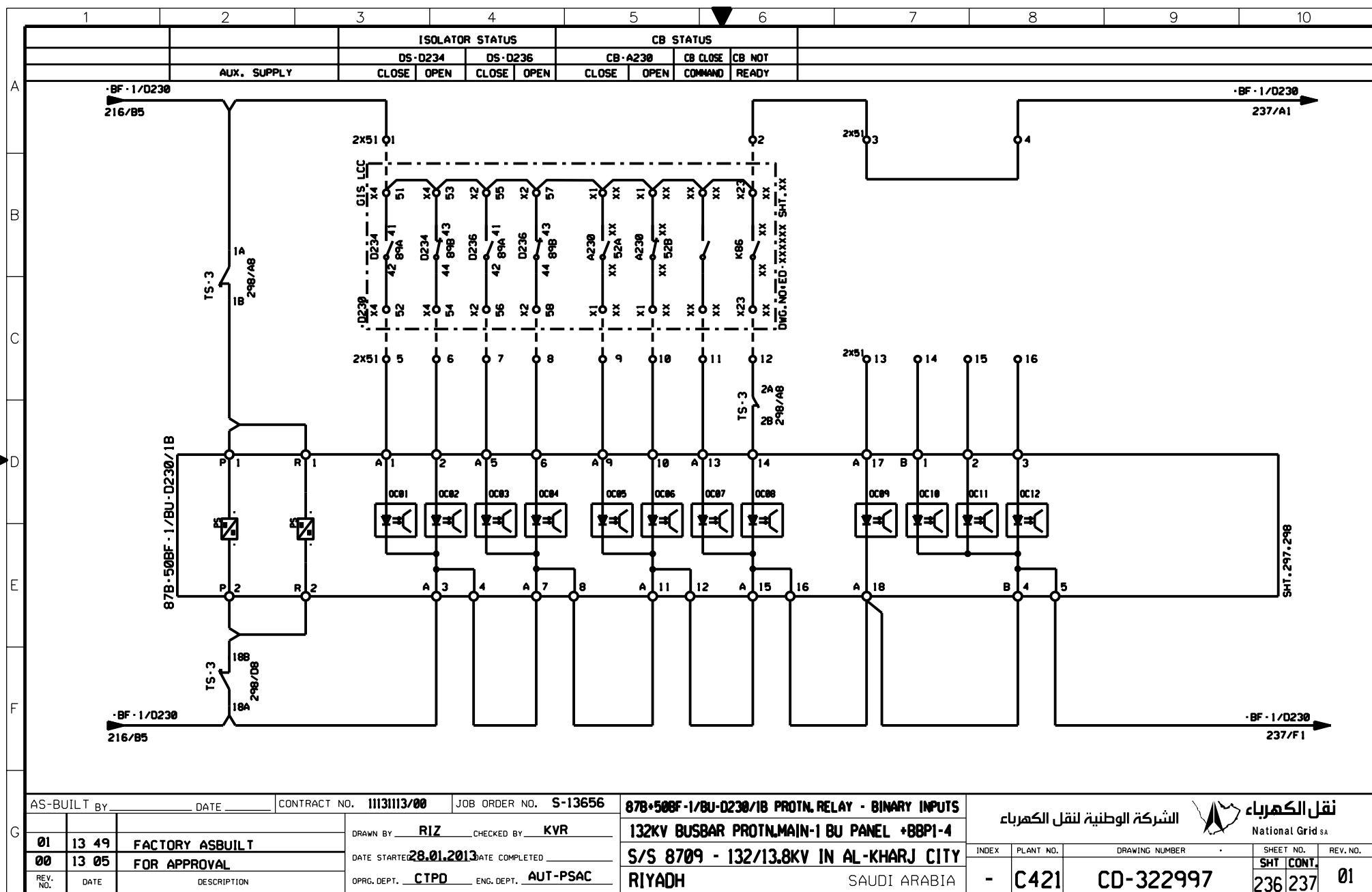
AS-BUILT BY \_\_\_\_\_ DATE \_\_\_\_\_ CONTRACT NO. **11131113/00** JOB ORDER NO. **S-13656**

01	13 49	FACTORY ASBUILT
00	13 05	FOR APPROVAL
REV. NO.	DATE	DESCRIPTION

DRAWN BY **RIZ** CHECKED BY **KVR**  
 DATE STARTED **28.01.2013** DATE COMPLETED \_\_\_\_\_  
 OPRG. DEPT. **CTPD** ENG. DEPT. **AUT-PSAC**

**CBF & BUSBAR PROTN-1 TRIP RELAY CIRCUIT**  
**132KV BUSBAR PROTN.MAIN-1 BU PANEL +BBP1-4**  
**S/S 8709 - 132/13.8KV IN AL-KHARJ CITY**  
**RIYADH SAUDI ARABIA**

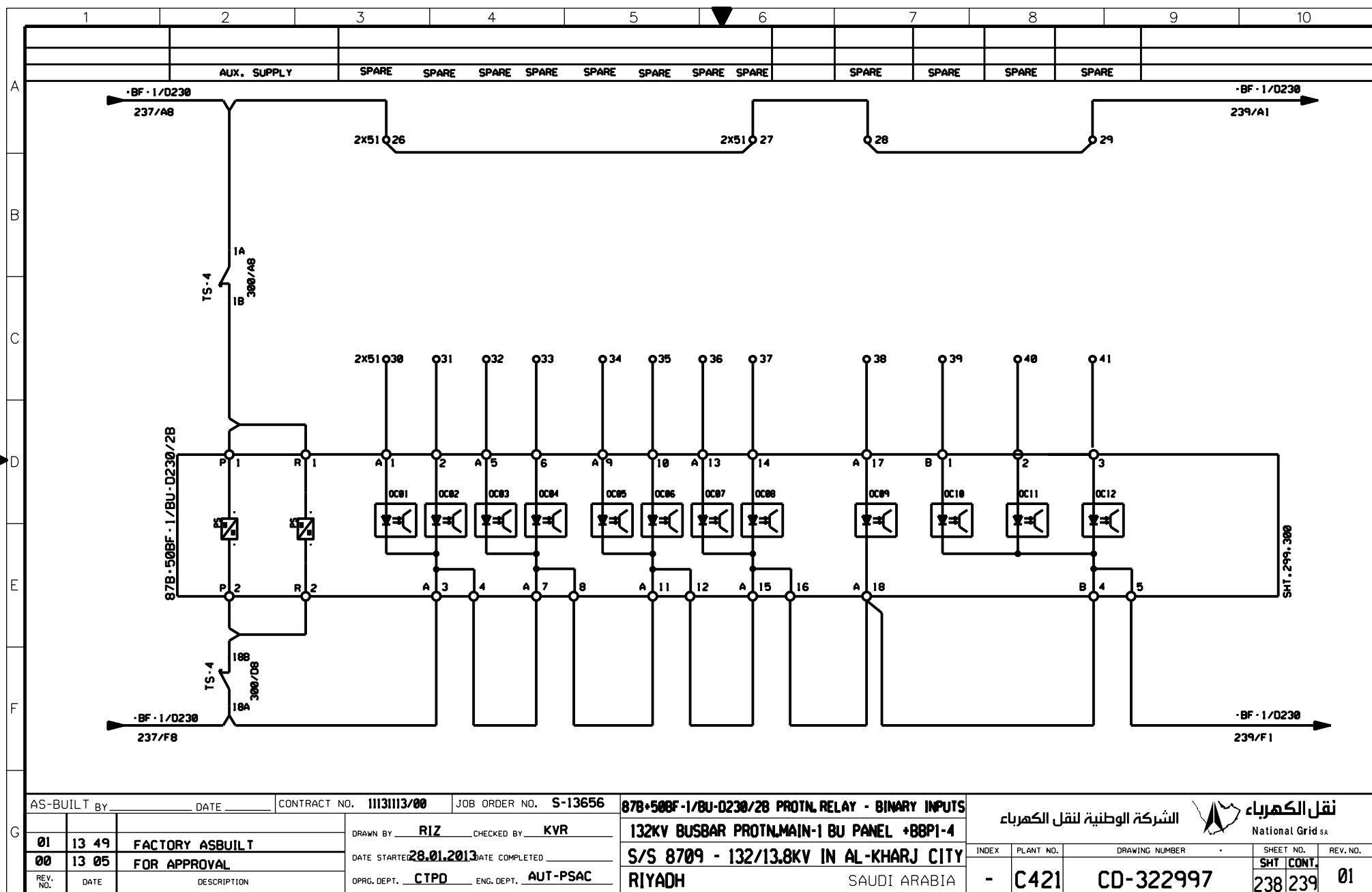
الشركة الوطنية لنقل الكهرباء					نقل الكهرباء	
					National Grid SA	
INDEX	PLANT NO.	DRAWING NUMBER		SHEET NO.		REV. NO.
-	C421	CD-322997		SHT CONT.		01
				235	236	



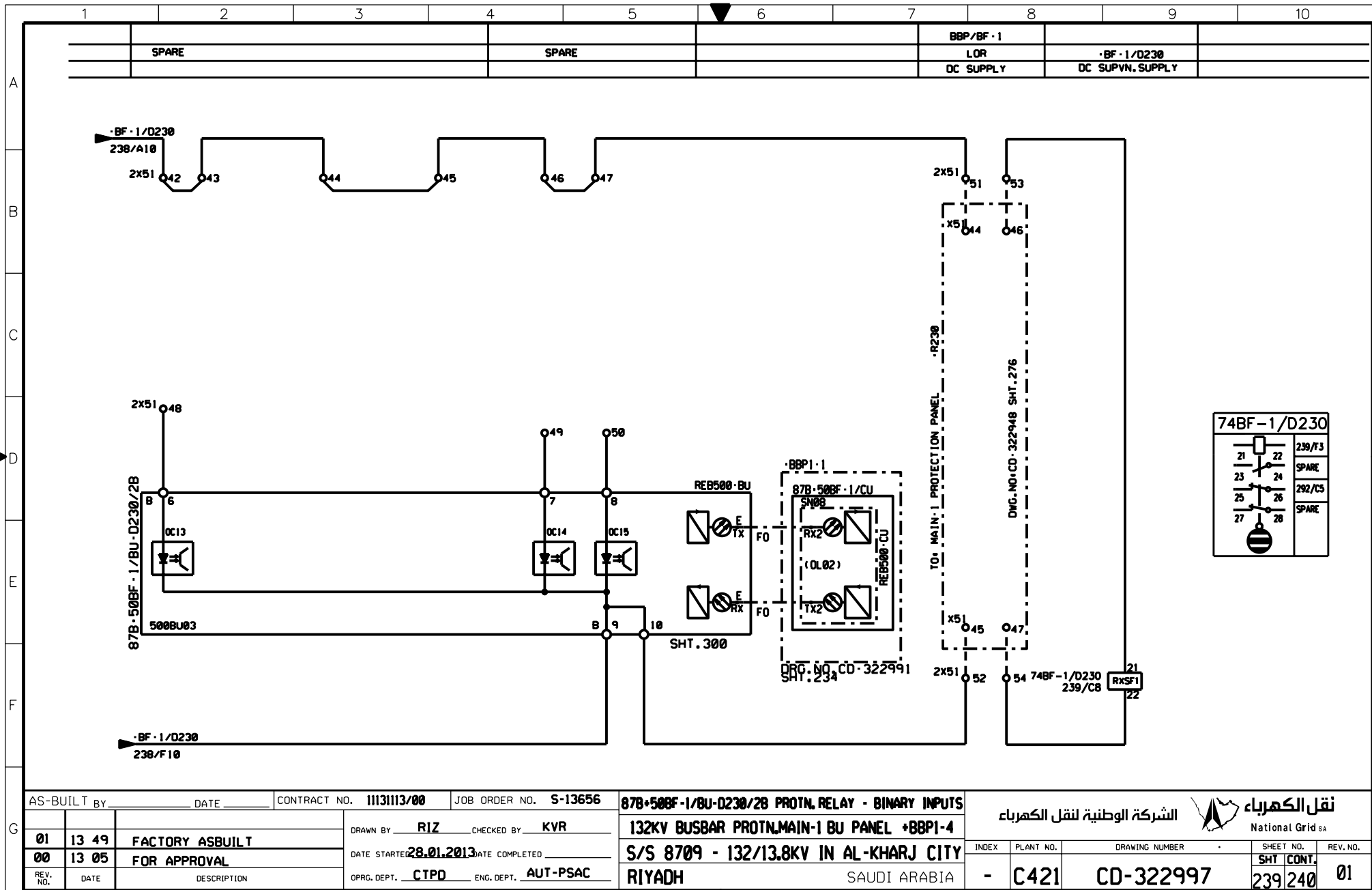
AS-BUILT BY _____ DATE _____		CONTRACT NO. <b>11131113/00</b>		JOB ORDER NO. <b>S-13656</b>		<b>87B-50BF-1/BU-D230/1B PROTN.RELAY - BINARY INPUTS</b>	
<b>01</b>	<b>13 49</b>	<b>FACTORY ASBUILT</b>		DRAWN BY <b>RIZ</b> CHECKED BY <b>KVR</b>		<b>132KV BUSBAR PROTN.MAIN-1 BU PANEL +BBPI-4</b>	
<b>00</b>	<b>13 05</b>	<b>FOR APPROVAL</b>		DATE STARTED <b>28.01.2013</b> DATE COMPLETED _____		<b>S/S 8709 - 132/13.8KV IN AL-KHARJ CITY</b>	
REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. <b>CTPD</b> ENG. DEPT. <b>AUT-PSAC</b>		<b>RIYADH SAUDI ARABIA</b>	

الشركة الوطنية لنقل الكهرباء		نقل الكهرباء		National Grid sa	
INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.	
-	C421	CD-322997	SHT CONT.	01	
			236/237		

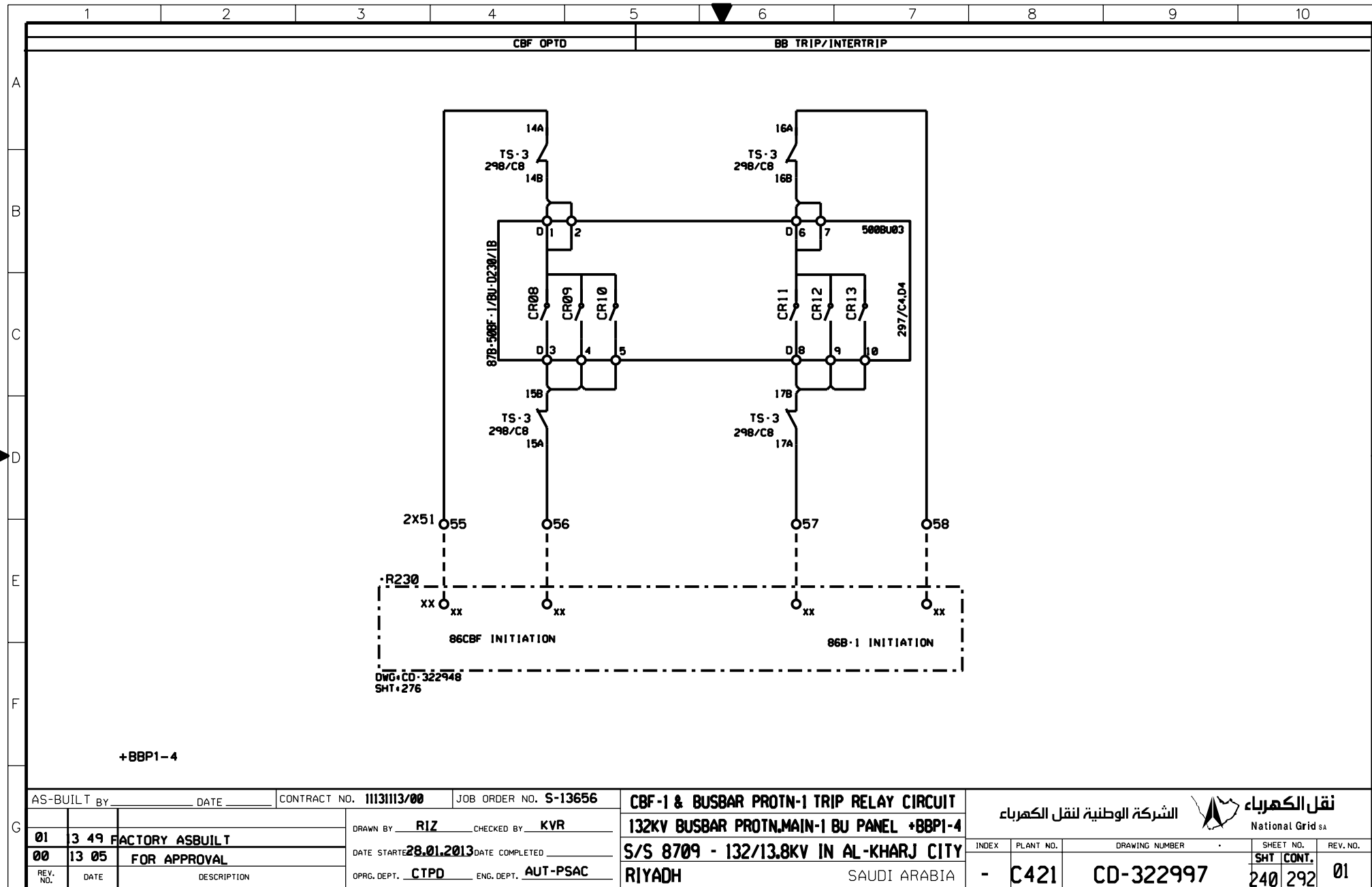




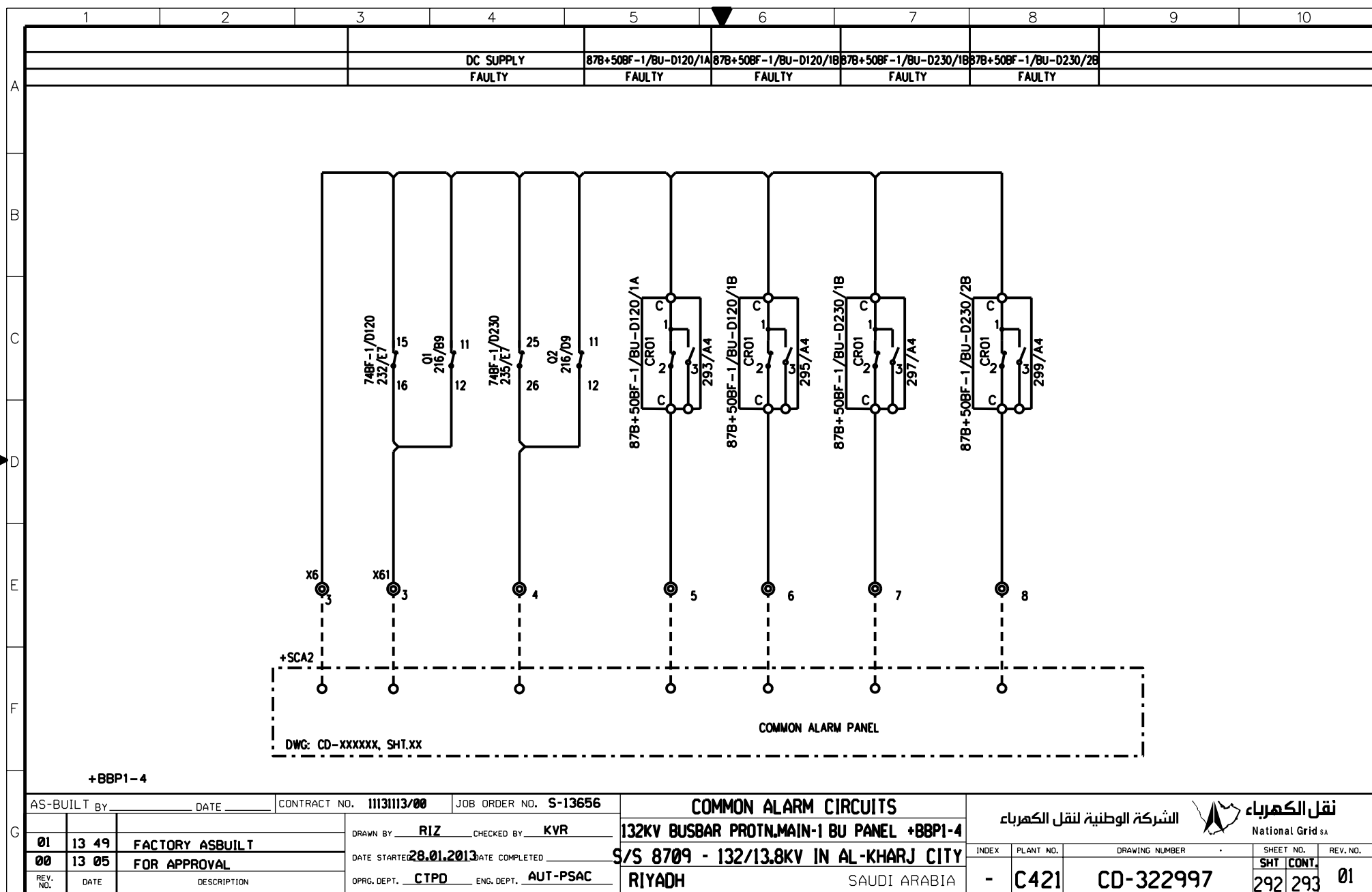
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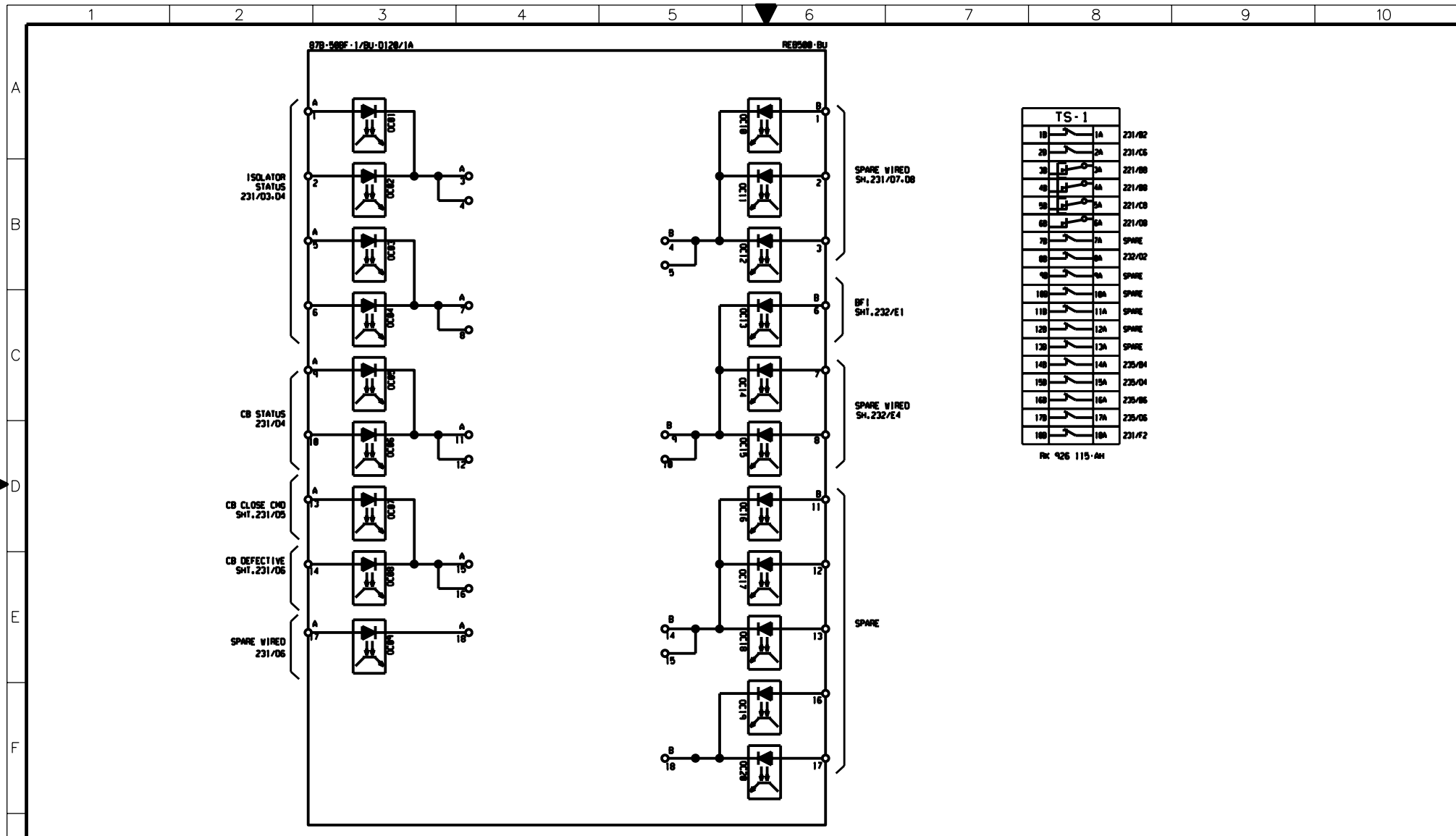
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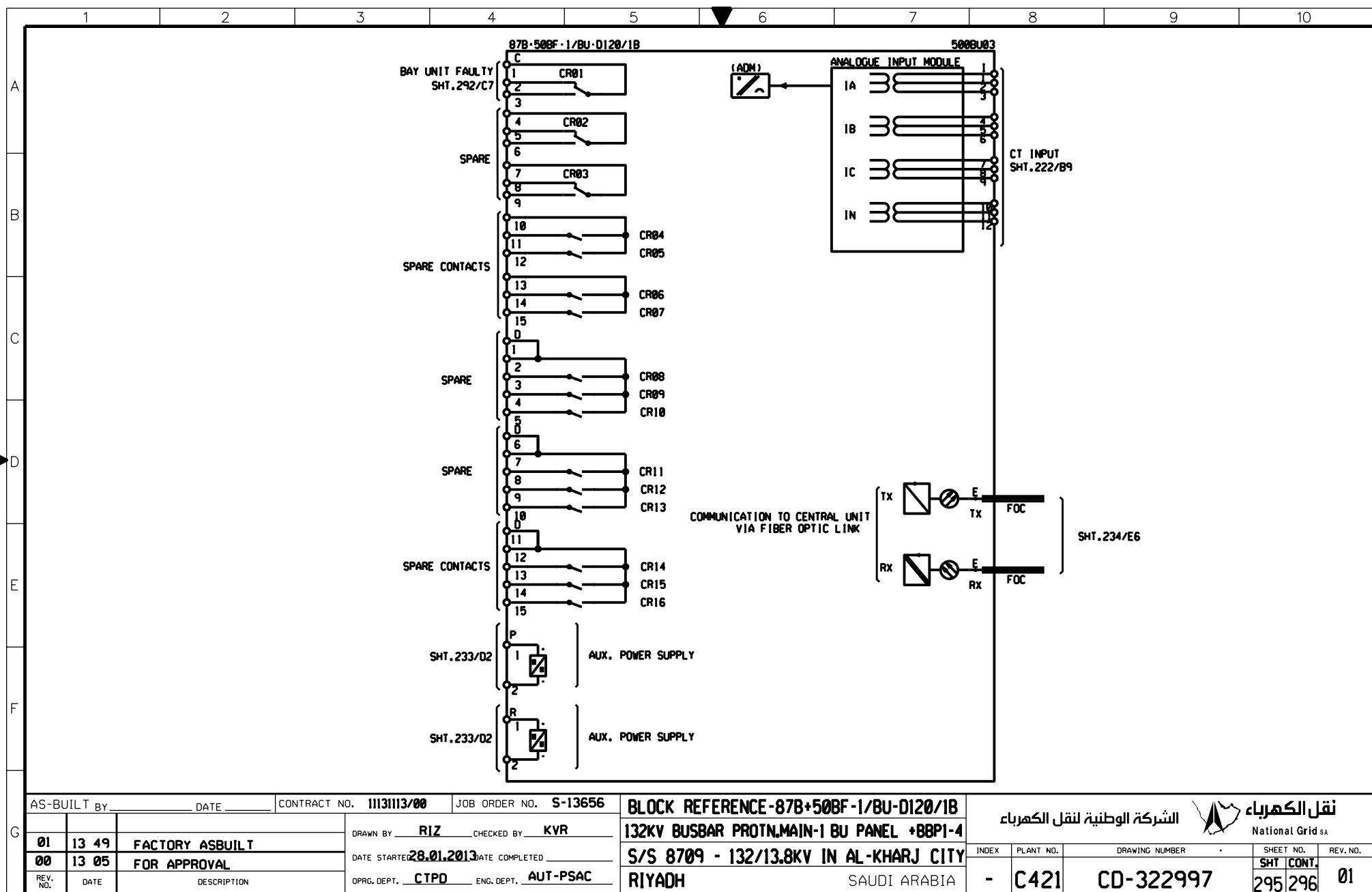






AS-BUILT BY _____ DATE _____			CONTRACT NO. <b>1113113/00</b>		JOB ORDER NO. <b>S-13656</b>		<b>BLOCK REFERENCE-87B+50BF-1/BU-D120/1A</b>				الشركة الوطنية لنقل الكهرباء			
			DRAWN BY <b>RIZ</b> CHECKED BY <b>KVR</b>				<b>132KV BUSBAR PROTN.MAIN-1 BU PANEL +8BP1-4</b>				National Grid sa			
			DATE STARTED <b>28.01.2013</b> DATE COMPLETED _____				<b>S/S 8709 - 132/13.8KV IN AL-KHARJ CITY</b>				INDEX PLANT NO. DRAWING NUMBER SHEET NO. REV. NO.			
			OPRG. DEPT. <b>CTPD</b> ENG. DEPT. <b>AUT-PSAC</b>				<b>RIYADH SAUDI ARABIA</b>				<b>- C421 CD-322997 294 295 01</b>			
REV. NO.	DATE	DESCRIPTION												
<b>01</b>	<b>13 49</b>	<b>FACTORY ASBUILT</b>												
<b>00</b>	<b>13 05</b>	<b>FOR APPROVAL</b>												

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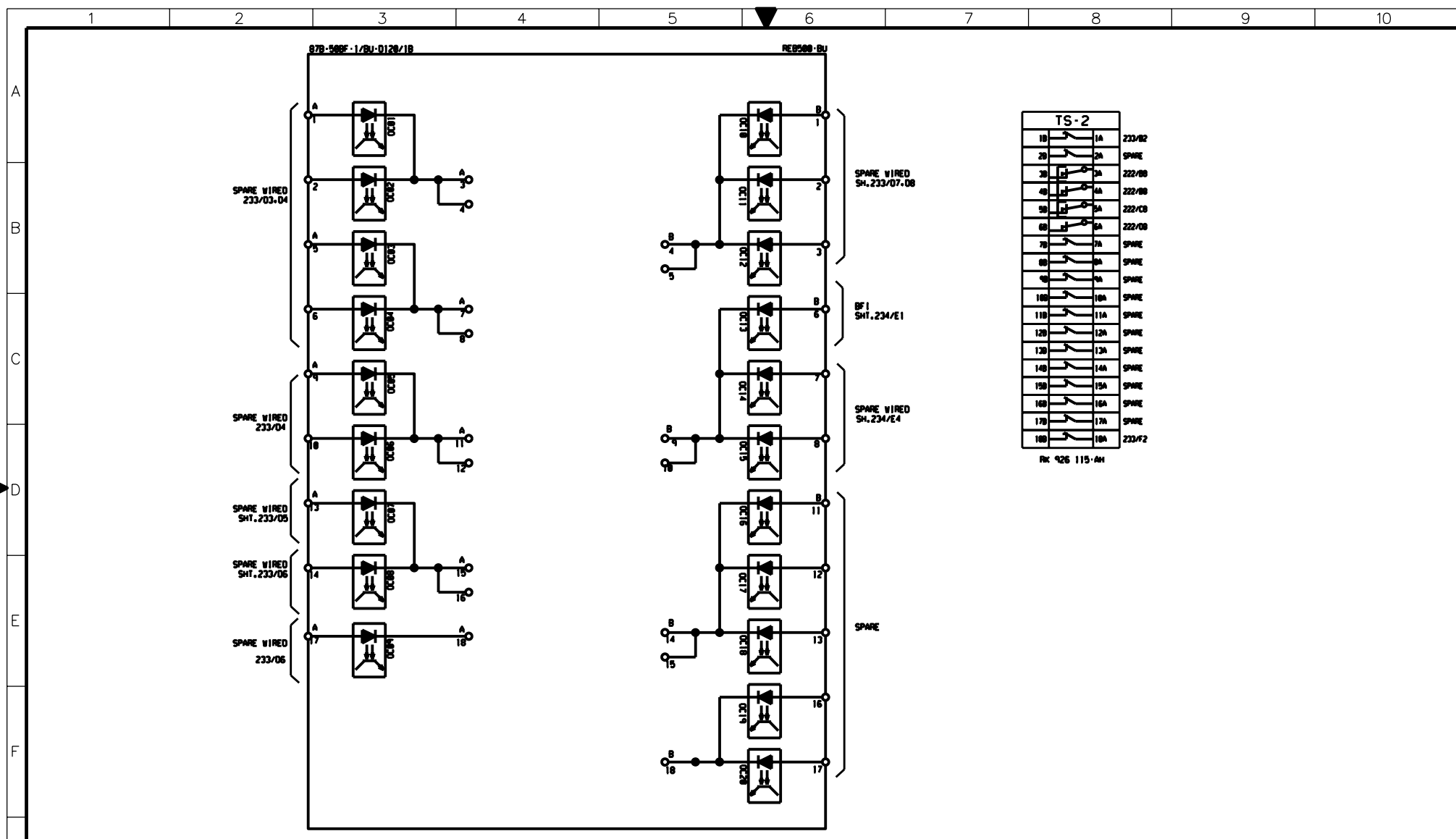


AS-BUILT BY \_\_\_\_\_ DATE \_\_\_\_\_ CONTRACT NO. **11131113/00** JOB ORDER NO. **S-13656**

01	13 49	FACTORY ASBUILT	DRAWN BY <b>RIZ</b> CHECKED BY <b>KVR</b>
00	13 05	FOR APPROVAL	DATE STARTED <b>28.01.2013</b> DATE COMPLETED _____
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. <b>CTPD</b> ENG. DEPT. <b>AUT-PSAC</b>

**BLOCK REFERENCE-87B+50BF-1/BU-D120/1B**  
**132KV BUSBAR PROTN.MAIN-1 BU PANEL +BBP1-4**  
**S/S 8709 - 132/13.8KV IN AL-KHARJ CITY**  
**RIYADH SAUDI ARABIA**

نقل الكهرباء الشركة الوطنية لنقل الكهرباء National Grid sa		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
		-	C421	CD-322997	SHT. CONT. 295 296	01



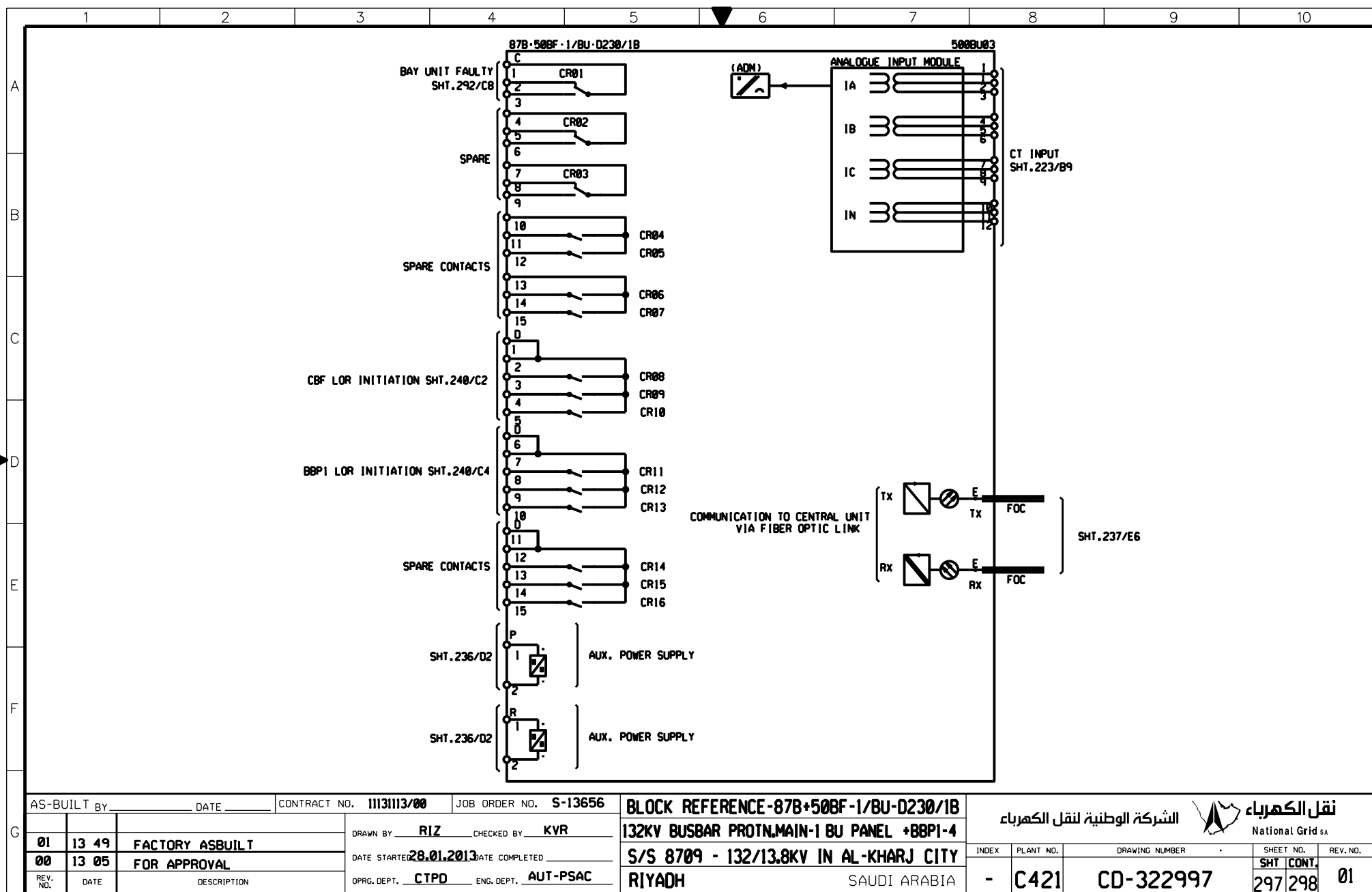
**TS-2**

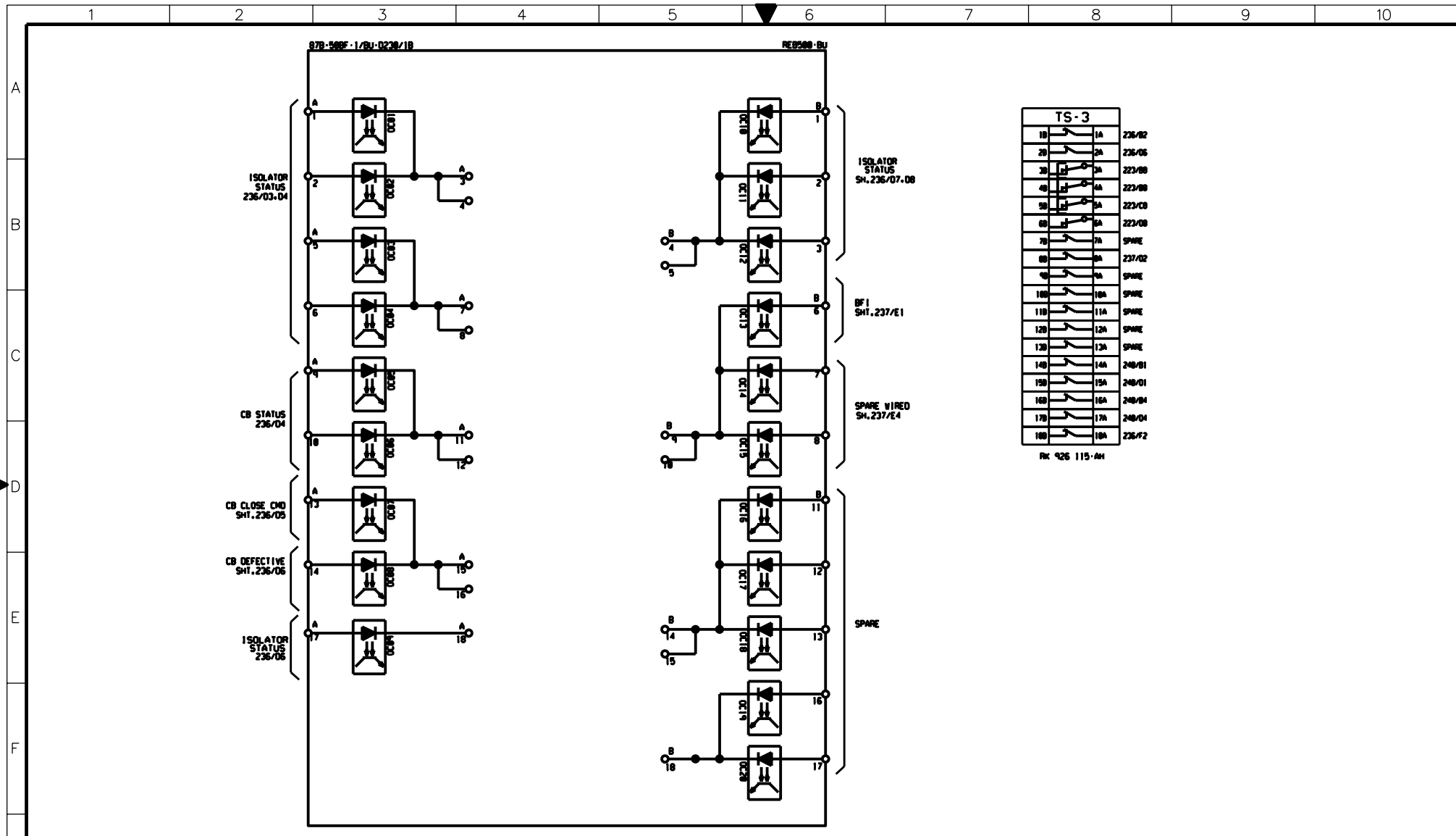
1B	1A	233/02
2B	2A	SPARE
3B	3A	222/00
4B	4A	222/00
5B	5A	222/00
6B	6A	222/00
7B	7A	SPARE
8B	8A	SPARE
9B	9A	SPARE
10B	10A	SPARE
11B	11A	SPARE
12B	12A	SPARE
13B	13A	SPARE
14B	14A	SPARE
15B	15A	SPARE
16B	16A	SPARE
17B	17A	SPARE
18B	18A	233/02

RK 926 115-AM

AS-BUILT BY _____ DATE _____		CONTRACT NO. <b>1113113/00</b>	JOB ORDER NO. <b>S-13656</b>	<b>BLOCK REFERENCE-87B+50BF-1/BU-D120/1B</b>		نقل الكهرباء الشركة الوطنية لنقل الكهرباء National Grid sa				
DRAWN BY <b>RIZ</b> CHECKED BY <b>KVR</b>				<b>132KV BUSBAR PROTN.MAIN-1 BU PANEL +BBP1-4</b>						
DATE STARTED <b>28.01.2013</b> DATE COMPLETED _____				<b>S/S 8709 - 132/13.8KV IN AL-KHARJ CITY</b>		INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
PRGR. DEPT. <b>CTPD</b> ENG. DEPT. <b>AUT-PSAC</b>				<b>RIYADH SAUDI ARABIA</b>		-	<b>C421</b>	<b>CD-322997</b>	<b>296</b> <b>297</b>	<b>01</b>

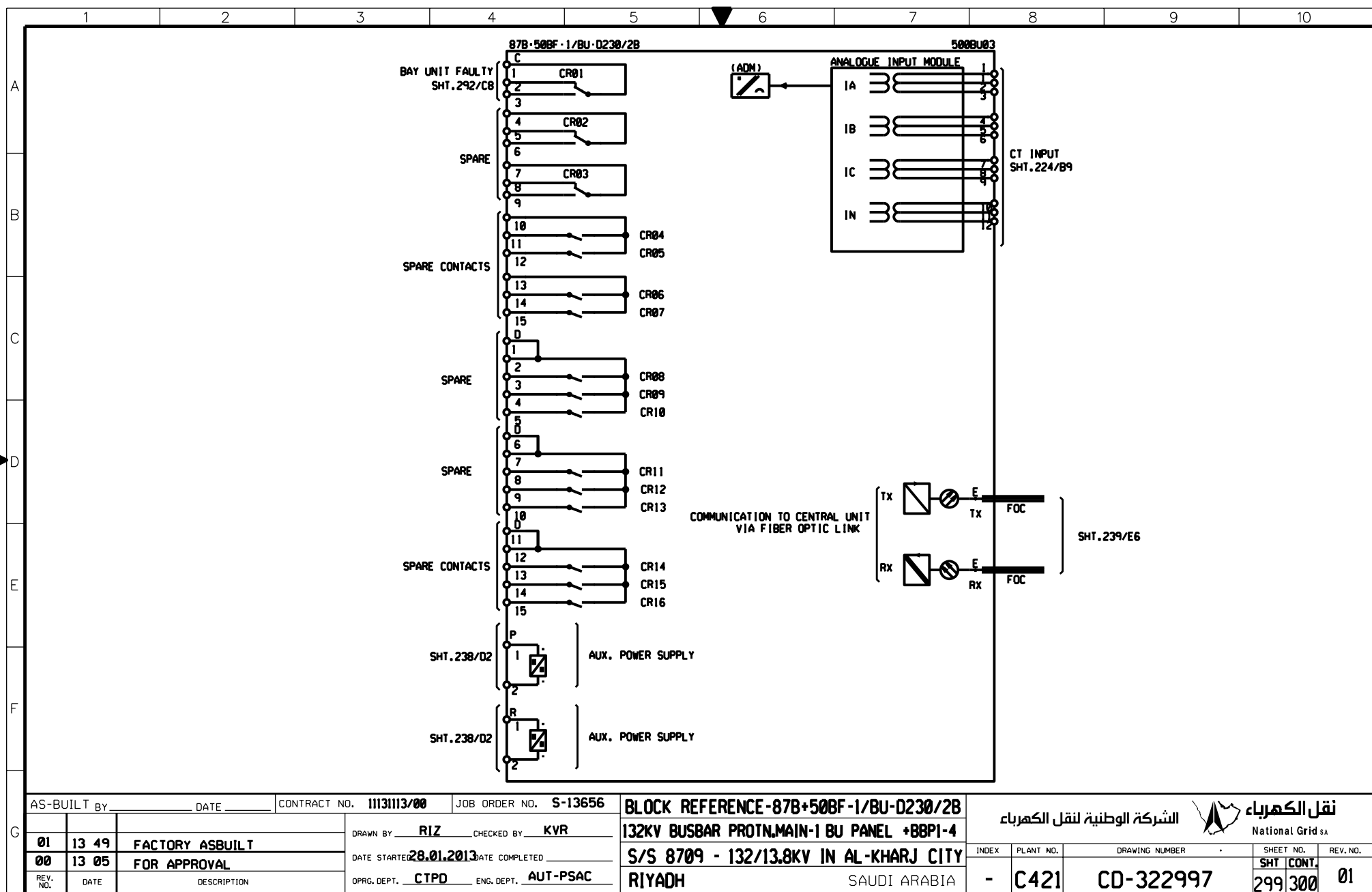
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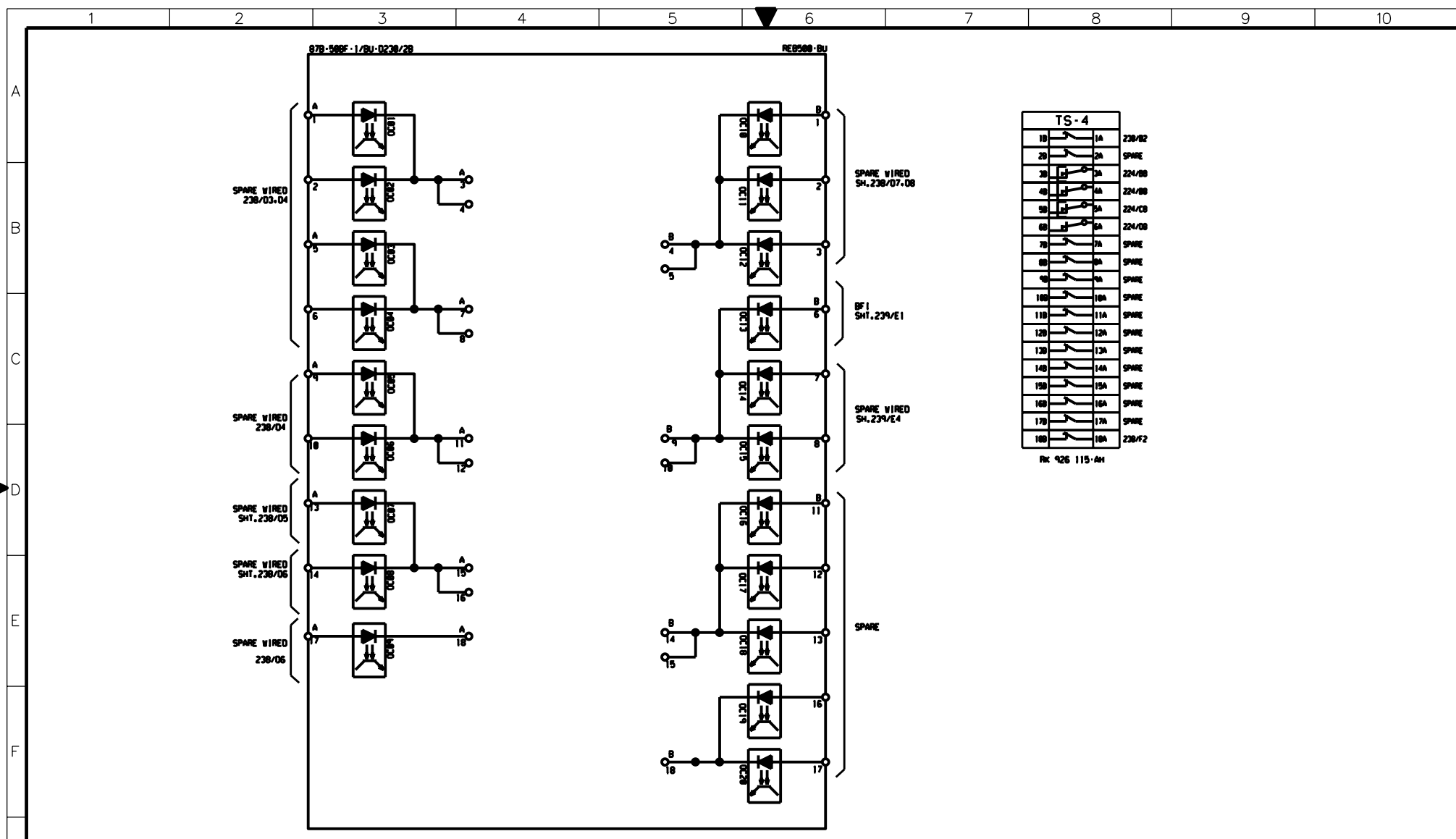


AS-BUILT BY _____ DATE _____		CONTRACT NO. <b>1113113/00</b>		JOB ORDER NO. <b>S-13656</b>		<b>BLOCK REFERENCE-87B+50BF-1/BU-D230/18</b>		نقل الكهرباء الشركة الوطنية لنقل الكهرباء National Grid sa	
<b>01</b>	<b>13 49</b>	<b>FACTORY ASBUILT</b>		DRAWN BY <b>RIZ</b> CHECKED BY <b>KVR</b>		<b>132KV BUSBAR PROT.N.MAIN-1 BU PANEL +BBPI-4</b>		INDEX PLANT NO. DRAWING NUMBER SHEET NO. REV. NO. - C421 CD-322997 298 299 01	
<b>00</b>	<b>13 05</b>	<b>FOR APPROVAL</b>		DATE STARTED <b>28.01.2013</b> DATE COMPLETED _____		<b>S/S 8709 - 132/13.8KV IN AL-KHARJ CITY</b>		SHT CONT. 298 299	
REV. NO.	DATE	DESCRIPTION		OPRG. DEPT. <b>CTPD</b> ENG. DEPT. <b>AUT-PSAC</b>		<b>RIYADH SAUDI ARABIA</b>			

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AS-BUILT BY _____ DATE _____		CONTRACT NO. <b>1113113/00</b>		JOB ORDER NO. <b>S-13656</b>		<b>BLOCK REFERENCE-87B+50BF-1/BU-D230/2B</b>		الشركة الوطنية لنقل الكهرباء		نقل الكهرباء	
DRAWN BY <b>RIZ</b> CHECKED BY <b>KVR</b>		DATE STARTED <b>28.01.2013</b> DATE COMPLETED _____		S/S <b>8709 - 132/13.8KV IN AL-KHARJ CITY</b>		INDEX		PLANT NO.		DRAWING NUMBER	
PRGR. DEPT. <b>CTPD</b> ENG. DEPT. <b>AUT-PSAC</b>		SAUDI ARABIA		Riyadh		- C421		CD-322997		SHEET NO.	
REV. NO.		DATE		DESCRIPTION		SHT		CONT.		REV. NO.	
01 13 49		FACTORY ASBUILT		FOR APPROVAL		300		301		01	

	1	2	3	4	5	6	7	8	9	10																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
A	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th style="width:15%;">REFERENCE</th> <th style="width:15%;">1X1 CT CKT.</th> <th style="width:15%;">REFERENCE</th> <th style="width:15%;">2X1 CT CKT.</th> <th style="width:15%;">REFERENCE</th> <th style="width:15%;">1X51 CON &amp; PROTIN CKTS.</th> <th style="width:15%;">REFERENCE</th> <th style="width:15%;">1X51 CON &amp; PROTIN CKTS.</th> <th style="width:15%;">REFERENCE</th> <th style="width:15%;">2X51 CON &amp; PROTIN CKTS.</th> <th style="width:15%;">REFERENCE</th> <th style="width:15%;">2X51 CON &amp; PROTIN CKTS.</th> </tr> <tr><td>221/B7</td><td>1</td><td>223/B7</td><td>1</td><td>231/A3</td><td>1</td><td>234/B8</td><td>51</td><td>236/A3</td><td>1</td><td>239/B8</td><td>51</td></tr> <tr><td>221/B7</td><td>2</td><td>223/B7</td><td>2</td><td>231/A6</td><td>2</td><td>234/F8</td><td>52</td><td>236/A6</td><td>2</td><td>239/F8</td><td>52</td></tr> <tr><td>221/C7</td><td>3</td><td>223/C7</td><td>3</td><td>231/A7</td><td>3</td><td>234/B8</td><td>53</td><td>236/A7</td><td>3</td><td>239/B8</td><td>53</td></tr> <tr><td>221/C7</td><td>4</td><td>223/C7</td><td>4</td><td>231/A8</td><td>4</td><td>234/F8</td><td>54</td><td>236/A8</td><td>4</td><td>239/F8</td><td>54</td></tr> <tr><td>221/C7</td><td>5</td><td>223/C7</td><td>5</td><td>231/C3</td><td>5</td><td>235/E4</td><td>55</td><td>236/C3</td><td>5</td><td>240/E4</td><td>55</td></tr> <tr><td>221/C7</td><td>6</td><td>223/C7</td><td>6</td><td>231/C4</td><td>6</td><td>235/E4</td><td>56</td><td>236/C4</td><td>6</td><td>240/E4</td><td>56</td></tr> <tr><td>221/C7</td><td>7</td><td>223/C7</td><td>7</td><td>231/C4</td><td>7</td><td>235/E6</td><td>57</td><td>236/C4</td><td>7</td><td>240/E6</td><td>57</td></tr> <tr><td>221/D7</td><td>8</td><td>223/D7</td><td>8</td><td>231/C4</td><td>8</td><td>235/E7</td><td>58</td><td>236/C4</td><td>8</td><td>240/E7</td><td>58</td></tr> <tr><td>221/D7</td><td>9</td><td>223/D7</td><td>9</td><td>231/C5</td><td>9</td><td>SPARE</td><td>59</td><td>236/C5</td><td>9</td><td>SPARE</td><td>59</td></tr> <tr><td>SPARE</td><td>10</td><td>223/D7</td><td>10</td><td>231/C5</td><td>10</td><td>SPARE</td><td>60</td><td>236/C5</td><td>10</td><td>SPARE</td><td>60</td></tr> <tr><td>222/B7</td><td>11</td><td>224/B7</td><td>11</td><td>231/C6</td><td>11</td><td>SPARE</td><td>61</td><td>236/C6</td><td>11</td><td>SPARE</td><td>61</td></tr> <tr><td>222/B7</td><td>12</td><td>224/B7</td><td>12</td><td>231/C6</td><td>12</td><td>SPARE</td><td>62</td><td>236/C6</td><td>12</td><td>SPARE</td><td>62</td></tr> <tr><td>222/C7</td><td>13</td><td>224/C7</td><td>13</td><td>231/C7</td><td>13</td><td>SPARE</td><td>63</td><td>236/C7</td><td>13</td><td>SPARE</td><td>63</td></tr> <tr><td>222/C7</td><td>14</td><td>224/C7</td><td>14</td><td>231/C7</td><td>14</td><td>SPARE</td><td>64</td><td>236/C7</td><td>14</td><td>SPARE</td><td>64</td></tr> 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REFERENCE	2X1 CT CKT.	REFERENCE	1X51 CON & PROTIN CKTS.	REFERENCE	1X51 CON & PROTIN CKTS.	REFERENCE	2X51 CON & PROTIN CKTS.	REFERENCE	2X51 CON & PROTIN CKTS.	221/B7	1	223/B7	1	231/A3	1	234/B8	51	236/A3	1	239/B8	51	221/B7	2	223/B7	2	231/A6	2	234/F8	52	236/A6	2	239/F8	52	221/C7	3	223/C7	3	231/A7	3	234/B8	53	236/A7	3	239/B8	53	221/C7	4	223/C7	4	231/A8	4	234/F8	54	236/A8	4	239/F8	54	221/C7	5	223/C7	5	231/C3	5	235/E4	55	236/C3	5	240/E4	55	221/C7	6	223/C7	6	231/C4	6	235/E4	56	236/C4	6	240/E4	56	221/C7	7	223/C7	7	231/C4	7	235/E6	57	236/C4	7	240/E6	57	221/D7	8	223/D7	8	231/C4	8	235/E7	58	236/C4	8	240/E7	58	221/D7	9	223/D7	9	231/C5	9	SPARE	59	236/C5	9	SPARE	59	SPARE	10	223/D7	10	231/C5	10	SPARE	60	236/C5	10	SPARE	60	222/B7	11	224/B7	11	231/C6	11	SPARE	61	236/C6	11	SPARE	61	222/B7	12	224/B7	12	231/C6	12	SPARE	62	236/C6	12	SPARE	62	222/C7	13	224/C7	13	231/C7	13	SPARE	63	236/C7	13	SPARE	63	222/C7	14	224/C7	14	231/C7	14	SPARE	64	236/C7	14	SPARE	64	222/C7	15	224/C7	15	231/C8	15	SPARE	65	236/C8	15	SPARE	65	222/C7	16	224/C7	16	231/C8	16	SPARE	66	236/C8	16	SPARE	66	222/C7	17	224/C7	17	232/A2	17	SPARE	67	237/A2	17	SPARE	67	222/D7	18	224/D7	18	232/A2	18	SPARE	68	237/A2	18	SPARE	68	222/D7	19	224/D7	19	232/A3	19	SPARE	69	237/A3	19	SPARE	69	SPARE	20	224/D7	20	232/A4	20	SPARE	70	237/A4	20	SPARE	70	SPARE	21	SPARE	21	232/A4	21	SPARE	71	237/A4	21	SPARE	71	SPARE	22	SPARE	22	232/A5	22	SPARE	72	237/A5	22	SPARE	72	SPARE	23	SPARE	23	232/C2	23	SPARE	73	237/C2	23	SPARE	73	SPARE	24	SPARE	24	232/D4	24	SPARE	74	237/D4	24	SPARE	74	SPARE	25	SPARE	25	232/D5	25	SPARE	75	237/D5	25	SPARE	75					233/A3	26			238/A3	26							233/A6	27			238/A6	27							233/A7	28			238/A7	28							233/A8	29			238/A8	29							233/C3	30			238/C3	30							233/C4	31			238/C4	31							233/C4	32			238/C4	32							233/C4	33			238/C4	33							233/C5	34			238/C5	34							233/C5	35			238/C5	35							233/C6	36			238/C6	36							233/C6	37			238/C6	37							233/C7	38			238/C7	38							233/C7	39			238/C7	39							233/C8	40			238/C8	40							233/C8	41			238/C8	41							234/A2	42			238/A2	42							234/A2	43			239/A2	43							234/A3	44			239/A2	44							234/A4	45			239/A3	45							234/A4	46			239/A3	46							234/A5	47			239/A4	47							234/C2	48			239/A5	48							234/D4	49			239/C2	49							234/D5	50			239/D4	50		
REFERENCE	1X1 CT CKT.	REFERENCE	2X1 CT CKT.	REFERENCE	1X51 CON & PROTIN CKTS.	REFERENCE	1X51 CON & PROTIN CKTS.	REFERENCE	2X51 CON & PROTIN CKTS.	REFERENCE	2X51 CON & PROTIN CKTS.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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AS-BUILT BY \_\_\_\_\_ DATE \_\_\_\_\_ CONTRACT NO. **11131113/00** JOB ORDER NO. **S-13656**

01	13 49	FACTORY ASBUILT	DRAWN BY <b>RIZ</b> CHECKED BY <b>KVR</b>
00	13 05	FOR APPROVAL	DATE STARTED <b>28.01.2013</b> DATE COMPLETED _____
REV. NO.	DATE	DESCRIPTION	OPRG. DEPT. <b>CTPD</b> ENG. DEPT. <b>AUT-PSAC</b>

**TERMINAL BLOCKS PANEL +BB1-4**

**132KV BUSBAR PROTIN.MAIN-1 BU PANEL +BBP1-4**

**S/S 8709 - 132/13.8KV IN AL-KHARJ CITY**

**RIYADH SAUDI ARABIA**

**نقل الكهرباء**  
الشركة الوطنية لنقل الكهرباء  
National Grid sa

INDEX	PLANT NO.	DRAWING NUMBER	SHEET NO.	REV. NO.
-	C421	CD-322997	301 NIL	01